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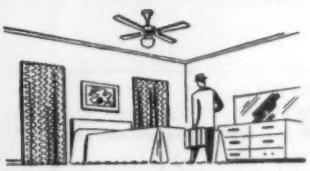
Serving the 18 Southern and Southwestern States

Utility converts its building into showplace for lighting—page 24

JULY, 1954



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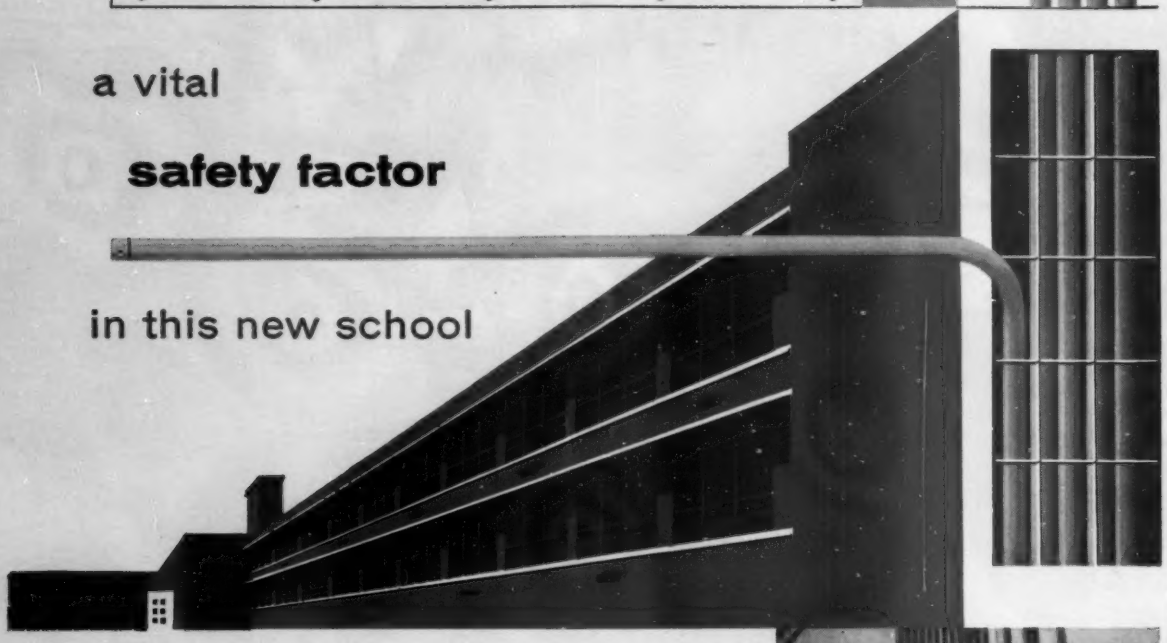

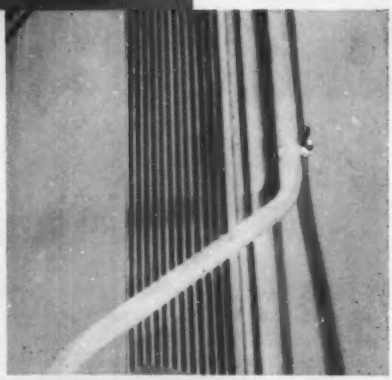

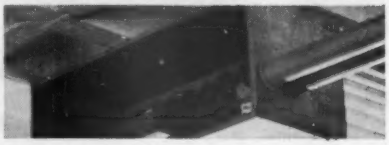

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SERVING THE 18 SOUTHERN AND SOUTHWESTERN STATES

July, 1954 Vol. 34—No. 7

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TO HELP THE BUSY READER—

A new design for **stadium lighting installations** makes use of a transformer vault as the base for the steel poles supporting the fixture bank. Grim Stadium, at Texarkana, Texas, is lighted in this manner to a level of 30 to 32 footcandles. **See page 18.**

An entirely new type of **electrical maintenance** has come into being through the extensive use of electronic control equipment in some industries. The article on **page 20** tells how the maintenance staff of a large southern paper mill has organized to handle this phase of their work.

A comprehensive survey made several years ago as to the lighting needs of stores and industries has led to the establishment of a National Lighting Bureau and a program for **lighting modernization promotion.** A brief review of this program, and how local groups can utilize it to advantage, is described on **page 28.**

Six recent **official Code interpretations** clear up several problems in the application of the Code. **See page 30.**

Several additional **data sheets** in the series on Electrical Estimating are presented in this issue, beginning on **page 38.** This series began in the February 1954 issue.

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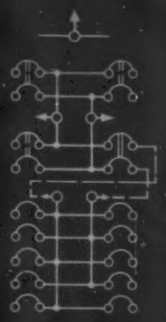
the answer to increased residential electric service demands



NEW FA SPLIT-BUS

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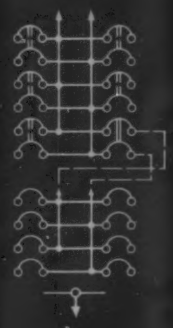
SERVICE EQUIPMENT



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Economic comment

by J. Whitney Bunting, Ph.D.

◆ AN UNUSUAL circumstance appears to be in the offing when next labor force figures are issued by the government. This report will show, in all probablity, an increase in both the number of employed as well as the number of unemployed. It sounds like a paradox, but really is not. Each year during the month of June thousands of young men and women are graduated from high school and college, most anxious to join the labor force of the United States.

In recent years jobs for this group at good salaries were available to all. This year the situation has been somewhat different. American unemployment was on the increase during the first quarter of 1954 then declined rather steadily during the second quarter. Thus, although great gains have been made in the reduction of normal unemployment, this new supply of potential workers has not been absorbed into industry completely. And so the strange situation.

Current optimism would hold that our unemployed figures should remain at a fairly level point during the balance of 1954. A small increase, nothing alarming, may come in late summer but then the late summer business improvement should carry most jobs well into the early stages of 1955 at least. This prospect should do much to minimize the possible use of business recession as a campaign plank in the forthcoming elections, so important to the present administration, in November. Administration economists have held that the first quarter unemployment was purely temporary and would be overcome in large part by June. Present tabulations indicate the accuracy of their reasoning and prognostication.

Ethics in business

The economist is often unworried by the morality of business practice, feeling that the place of the economist is to see economic and business conditions as they are rather than working towards any defined improvement. This may be satisfactory for economists but the trend of business leadership thinking today is directed more and more to the improvement of business practice. It would appear that business itself plans to set up codes of ethics and fair practice so that the conduct of economic affairs might reach the level of professional conduct.

Much of this demand for better moral practice arises from the feeling that business executives do not receive the public approbation that is due them. The general reaction appears to be that since some business practice is of poor quality, then all who practice the profession of business must be bad, too. Here again is the "guilt by association" doctrine.

It has long been a known fact that in business about 98 per cent of the practitioners are honest, legitimate operators. It has also been known that the "bad" operators have reaped recognition while the great bulk of business men and women have had to fight to overcome the stigma of unethical practice. Thus, the trend today among business executives is to promote more adequate recognition of good practice and to instill in the minds of old and new employees that good practice is more than just common sense. It is public relations on the highest level. With this trend will come more adequate safeguards for the American consumer to the end that his satisfaction will be increased manifold.

Urbanization vs. suburbanization

A recent trend appears increasingly evident in most large cities of the United States—business and people are moving away from urban centers. It is not entirely the result of anticipated atomic warfare. Rather, it strikes deep at the heart of the American socio-economic structure, where more and more people believe that urban areas are becoming outmoded. People want out-of-doors living and the opportunity to have homes on pleasant streets and tree-filled lots. They want the health characteristics of rural life for their children and the chance for such children to play away from the dangers of traffic and city life.

Business, too, finds operating costs lower in suburban environments plus the added advantages of many fringe benefits including landscaping, adequate parking facilities, and often friendly tax assessments. The latter in particular has been of great import in forcing such action. The loss by the city of residential property owners has placed a heavier tax burden upon businesses left behind and such costs involve a problem in business competition. Moreover, with the increase of suburban shopping centers potential customers are lured away from downtown traffic congestion and consequently from trade with center city merchants.

The future of downtown business lies in the hands of city managers and planners. The urban area must be made both convenient and pleasant if it is not to descend to a state of stagnation, decay and slums. Modern cities are trying to control the problem in many ways, but the most important appear to be the following:

(1) Adequate traffic surveys to allow the free flow of both business and pleasure car traffic in downtown areas.

(2) Skyscraper parking at reasonable rates to compete with the quantity of land area for this purpose in suburban regions.

(3) Adequate and high speed service for business committees to places of employment.

(4) Sound taxation policies and assessments, including economies in governmental operation and spending.

(5) Beautification of center city areas in reference to parks and parkways for pleasant travel and relaxation.

Dr. Bunting, well-known southern economist, is president of Oglethorpe University, Oglethorpe, Ga.

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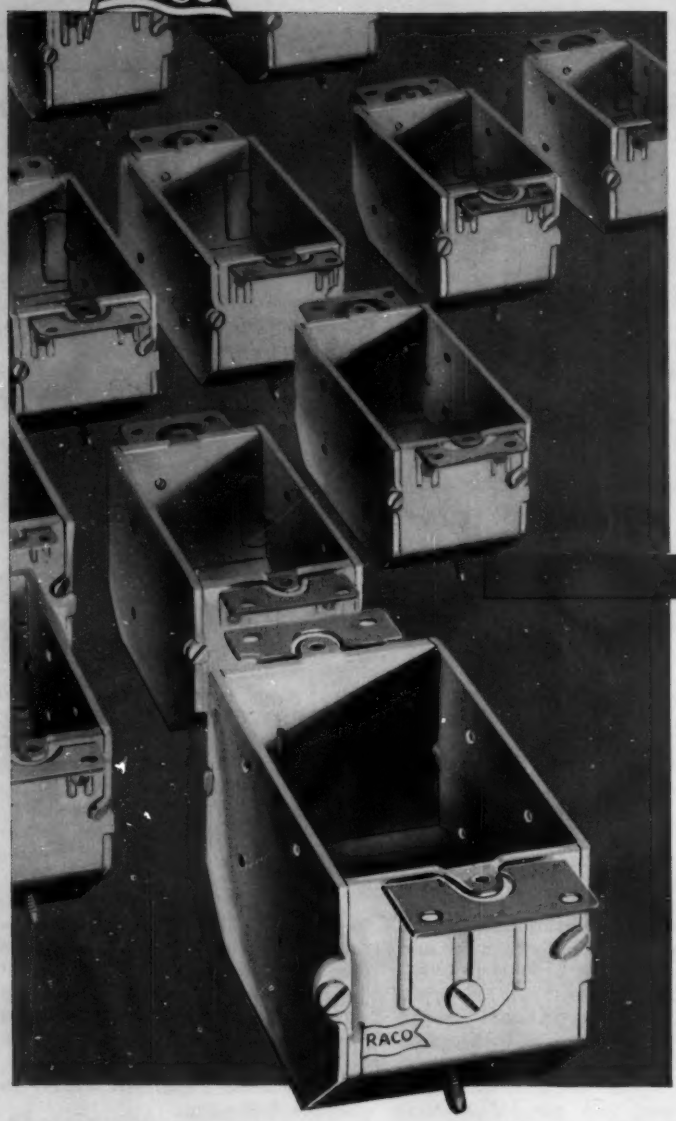

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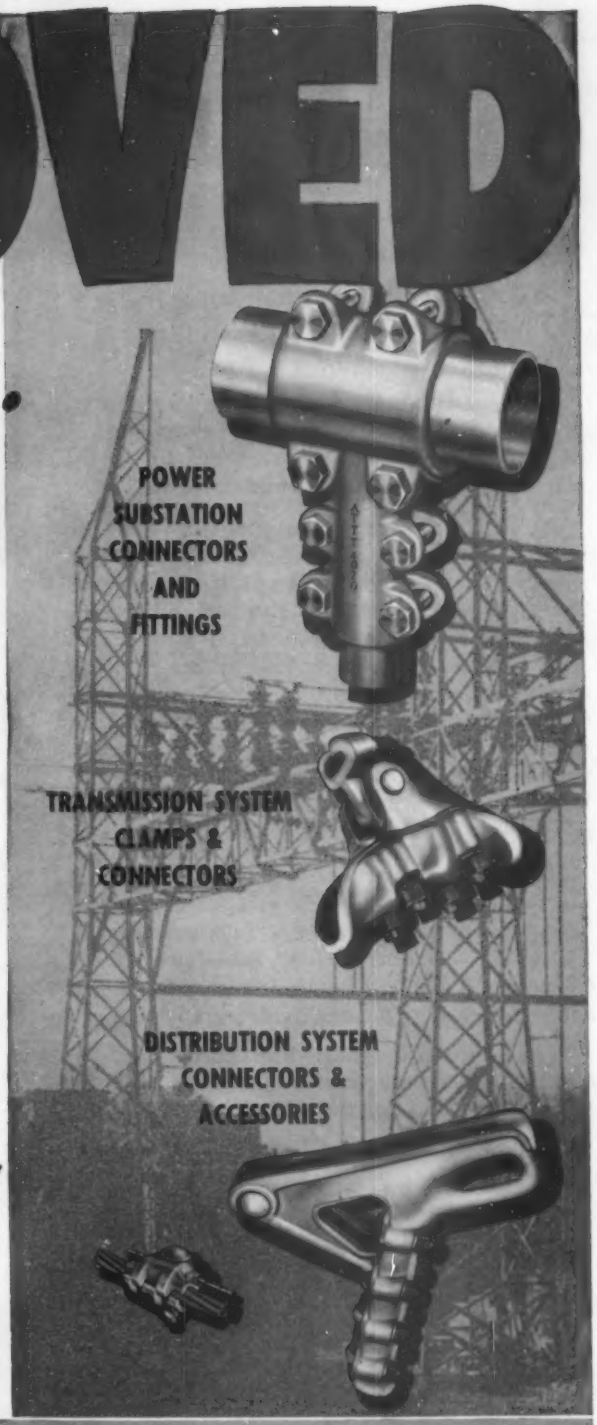
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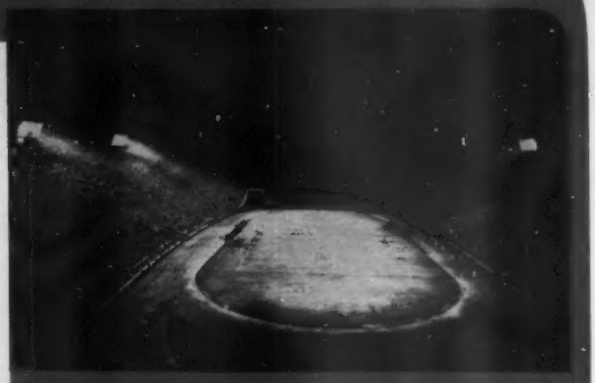

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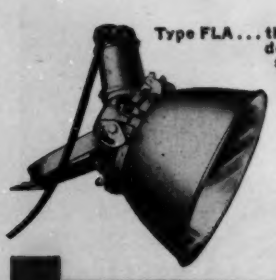

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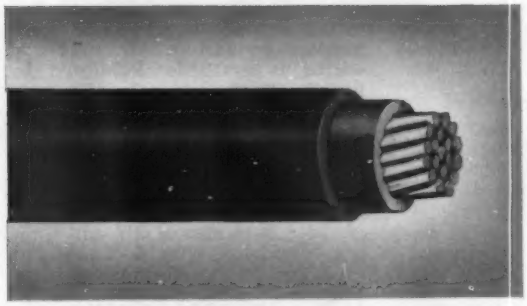

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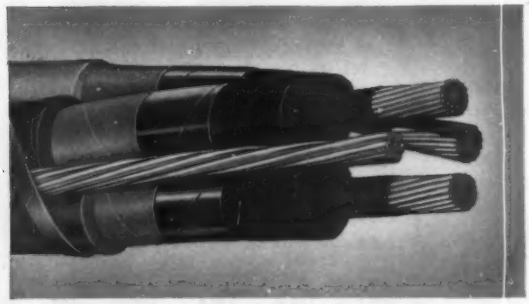

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1015—Squeezon Connectors

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1019—Service Panels

Information on protective electrical control centers for homes, apartment buildings, service stations, and industrial applications is contained in Bulletin PM-355, "BullDog Pushmatic Electric-Centers," issued by BullDog Electric Products Co., 7610 Jos Campau, Detroit, Mich.

1051—Transformers

"Care and Maintenance of Marcus Dry Type Transformers" manual No. M-100 goes into a complete description of the proper method of installing dry type transformers, particularly Class B, in all of the sizes which they are available today. Marcus Transformer Co., Inc., 32-34 Montgomery St., Hillside, N. J.

1071—Plugs and Receptacles

Additional loose-leaf sheets for insertion in the Pylet Catalog 1100 are available from the Pyle-National Co., 1354 N. Kostner Ave., Chicago 51, Ill. These pages describe a wide range of plugs and receptacles for special purposes.

1079—Washer Lugs

Krueger and Hudepohl, 3 E. Third St., Cincinnati 2, Ohio, in their Bulletin 8-DF, give information and catalog listings for their complete line of K&H solderless terminal folding double cupped washer lugs. The folder explains uses and applications of all the lugs.

1081—Busduct Data

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1085—Lighting Fixtures

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1103—Electrical Connectors

Burndy Industrial Catalog 52, featuring a complete line of general-purpose connectors for industrial wiring is available. Published by Burndy Engineering Co., Inc., 107 Bruckner Blvd., New York 54, N. Y.

1107—RW and RHW Wire

"The Ampere Squeezer," a booklet explaining visually the effect of ambient temperatures on current carrying capacities of RW and RHW Wire. Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.

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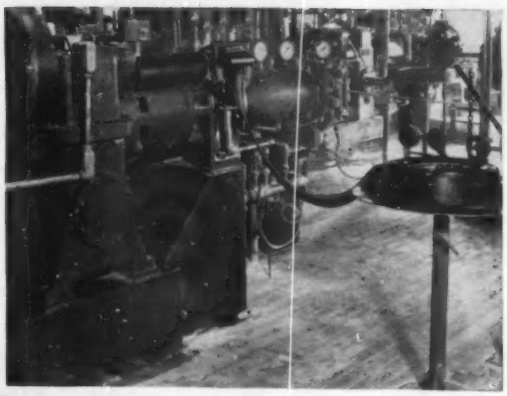

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the G.-E. Construction Materials Dept., Bridgeport 2, Conn. The booklet gives a picture story on the convenience, safety, and economy of this new wiring method.

1117—Air Cooled Fixtures

"Modern Air Cooled Fluorescent Fixture." Offering beauty, efficiency, and flexibility is provided by PEER LITE. New 8-page booklet for lighting specialist, giving complete engineering data and dimension is now available. Write Edwin F. Guth Co., 2615 Washington Blvd., St. Louis, Mo.

1131—Fluorescent Units

Fluorescent Units for Slimline Lamps. This new, illustrated, 20-page bulletin gives complete specifications of general purpose, "Magna-Flo" lighting systems for 96, 72 and 48-inch, T12 Slimline lamps. Write Benjamin Electric Mfg. Co., Des Plains, Ill., and ask for bulletin "mf."

1133—Vaportight Fixture

New Appleton "V-51" Series Convertible Vaportight Lighting Fixture is fully described and illustrated, for pendant, ceiling or bracket mounting, with or without reflectors and guards. Bulletin 5-A, 24 pages. Appleton Electric Co., 1701-59 Wellington Ave., Chicago 13, Ill.

1135—Wiring Devices

Catalog No. 51, containing complete electrical wiring device line of Leviton Mfg. Co., Brooklyn 22, N. Y., is a 96-page thoroughly illustrated one. Included are such features as the Kwik-change line, with wiring diagrams, a general index, and an index to catalog numbers.

1149—Insulator Catalog

Victor Insulators, Inc., Victor, N. Y., has available a complete catalog of Victor high, medium and low voltage insulators and line hardware. Complete contour shapes, dimensions, specifications and engineering data are included. Write for Bulletin No. 4 or use reply coupon.

1151—Circuit Breakers

A concise and well-illustrated 28-page catalog, No. C. B. 1000, on the new Stab-Lok Circuit Breaker System has been announced by Federal Electric Products Co., 50 Paris St., Newark 5, N. J. Advantages of the system comprise headings under which are listed complete specifications.

1153—Wiring Devices

A new catalog issued by Clyde W. Lint Co., 2323 West 18th St., Chicago 8, Ill., discusses details of the company's line of tools and electrical wiring devices, pole line hardware, and standard porcelain.

1155—Wire and Cable

Two catalogs—Bulletin RS-5, and Power and Control Cables, No. 24—available from Rome Cable Corp., Rome, N. Y. Power and Control Cables catalog is intended for utility, construction, and industrial engineering and purchasing personnel as a guide in selection of proper wire and cable types.

1157—Transformers

Dongan Electric Mfg. Co., 2998 Franklin, Detroit 7, Mich., has brochures available on its various types of transformers, including power circuit, control, signaling, machine tool, ignition and neon transformers.

1163—Connection Methods

A 20-page booklet illustrating practical and proved methods of making good connections with aluminum conductor, especially in distribution lines and service drops. Available in any quantity desired free of charge from Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, Calif.

1165—Ceiling Heating

"Sunwarm Electric Radiant Heating Cables." Complete information on ceiling radiant heating with Sunwarm radiant heating cables, including approved installation methods, available by writing Sunwarm, Inc., Box 263, Kingsport, Tenn.

1167—Industrial Lighting

A four-page catalog insert is now available from the Multi Electric Mfg. Co., Inc., 4223-43 West Lake St., Chicago 24, Ill. The leaflet describes Multi's line of lighting equipment and wiring devices, which include floodlights, vaporproof fixtures, and fluorescent and incandescent fixtures.

1169—Lighting Fixtures

Fluorescent and slimline luminaires, for schools, offices, stores, etc. Illustrated in the new catalog issued by Sta-Brite Fluorescent Mfg. Co., P. O. Box 6352, Miami, Fla., may be obtained upon request.

1175—Slimline Fixtures

The Light and Power Utilities Corp., 1035 Firestone Blvd., Memphis, Tenn., has recently issued a new catalog describing its line of fluorescent and slimline lighting fixtures. Typical installations of the fixtures are shown and discussed.

1177—Portable Furnaces

A new eight-page folder has been issued by Meier Electric and Machine Co., Inc., 3525 East Washington St., Indianapolis, Ind., giving descriptive information on the company's line of small electrical heating units. The booklet explains how the equipment may be used as primary or auxiliary heat.

1183—Electrical Equipment

The Wadsworth Electric Mfg. Co., Inc., Covington, Ky., has issued a new catalog Con 15-0 and Bulletin W. C. B. 53-1, containing data on their lines of Safety Switches, Service Equipment Distribution Panels and "E-Z-RED" Circuit Breakers.

1187—Fans and Blowers

Complete information on Peerless Electric Company's fans and blowers is available in illustrated Catalog SDA-160. Detail drawings, product specifications and rated capacities are included. The Peerless Electric Co., W. Market St., Warren, Ohio.

1189—Air Conditioners

Complete Line Folder—CL-54—covering Remington's "Tropic-Tested" line of both Window and Console Model Air Conditioners. Several exclusive features have been produced by Remington Air Conditioning Div., Auburn, N. Y.

1191—Control Centers

Colorful 24-page booklet by The Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio, describes advantages of Centralized electrical control systems through use of a-c Motor Control Centers. Typical installations, specifications and planning pits are featured.

1193—Cooling Equipment

Signal Electric Mfg. Co., Menominee, Mich., has recently issued its 1954 catalog which features the company's complete line of window, pedestal, desk, and oscillator fans. The new color book gives descriptions, features and specifications for each of the company's products.

1195—Kitchen Ventilation

Descriptive eight - page folder, Bulletin 620H, showing typical installations of all models in the Clipper line of ventilators is available from Trade-Wind Motorfans, Inc., 5725G S. Main St., Los Angeles 37, Calif. Folder includes dimensional drawings of installations helpful to building and electrical contractors.

1197—Convenience Outlets

Four-page bulletin gives complete information on the new P&S No. 500 for adding extra outlets to existing installations. Everything you need in a single package—no steel boxes required. Available from Pass & Seymour, Inc., Dept. ES, Syracuse 9, N. Y.

1199—Volt-ammeter Catalog

Amprobe Catalog No. 134 shows a complete line of snap-around volt-ammeters. Available from Pyramid Instrument Corp., Lynbrook, N. Y., the catalog includes detailed specifications and features of three high-voltage Amprobe Junior models for industrial use; four Amprobe Junior models for electricians and service men; new Amprobe Energizer.

1201—Loom Switch

Entirely new design fully described in an 8-page circular by The Arrow-Hart & Hegeman Electric Company, Hartford 6, Conn. Features fully enclosed, vibration-resistant mechanism; lint-proof enclosure; unusual compactness and dependability. Size 0, 2 hp to 600 volts a-c.

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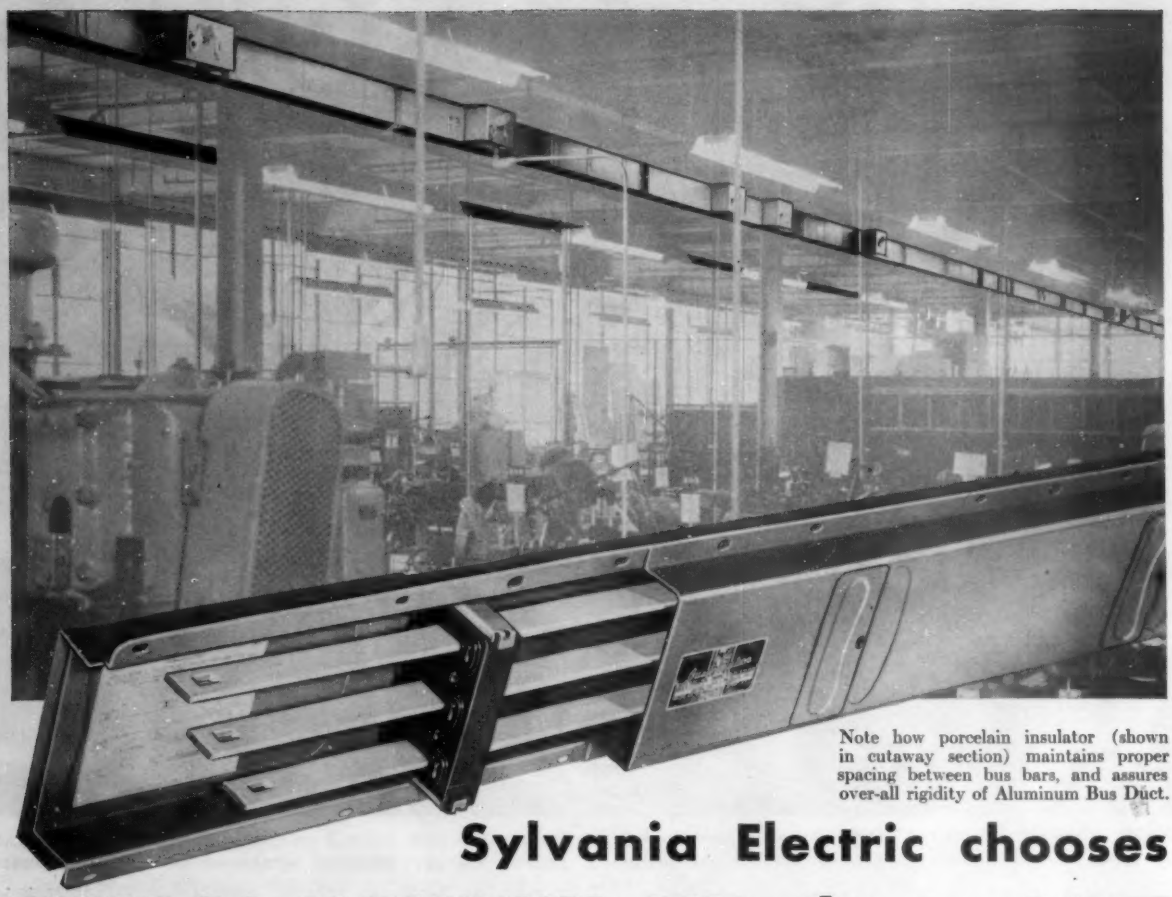

Note how porcelain insulator (shown in cutaway section) maintains proper spacing between bus bars, and assures over-all rigidity of Aluminum Bus Duct.

Sylvania Electric chooses

BULLDOG ALUMINUM BUStribution® DUCT

Sylvania Electric — a company with many years of experience in the electrical field — was one of the early users of BullDog Bus Duct with lightweight aluminum conductors. BullDog Aluminum BUStribution Duct has provided Sylvania's plants with low-cost power distribution, and has enabled them to meet expanding production requirements.

Illustrated above is an installation of flexible BullDog Aluminum Plug-In Duct feeding lights and machines at Sylvania's York, Pa. plant. In its new electronics laboratory and production plant in Mountain View, Calif., Sylvania installed a 600-foot run of BullDog Aluminum Plug-in Duct, and materially reduced the ceiling truss load. The combination of lightweight aluminum duct and the patented BullDog scarf-lap joint meant faster, easier installation at less cost.

Operating costs are low, too. And relocation is accomplished with the same speed and economy as the original installation. Stocking accessory parts is simplified because the aluminum duct systems are completely interchangeable with other BullDog systems. This is important to those companies with many existing BUStribution installations.

BullDog Aluminum BUStribution Duct (LO-X® Duct for feeder and welder circuits, and Plug-In Duct for branch circuits) is listed by Underwriters' Laboratories, Inc. For complete information, consult your local BullDog Field Engineer. Or, write: BullDog Electric Products Company, Dept. ES-47, Detroit 32, Michigan. ©BEPCO, 1954

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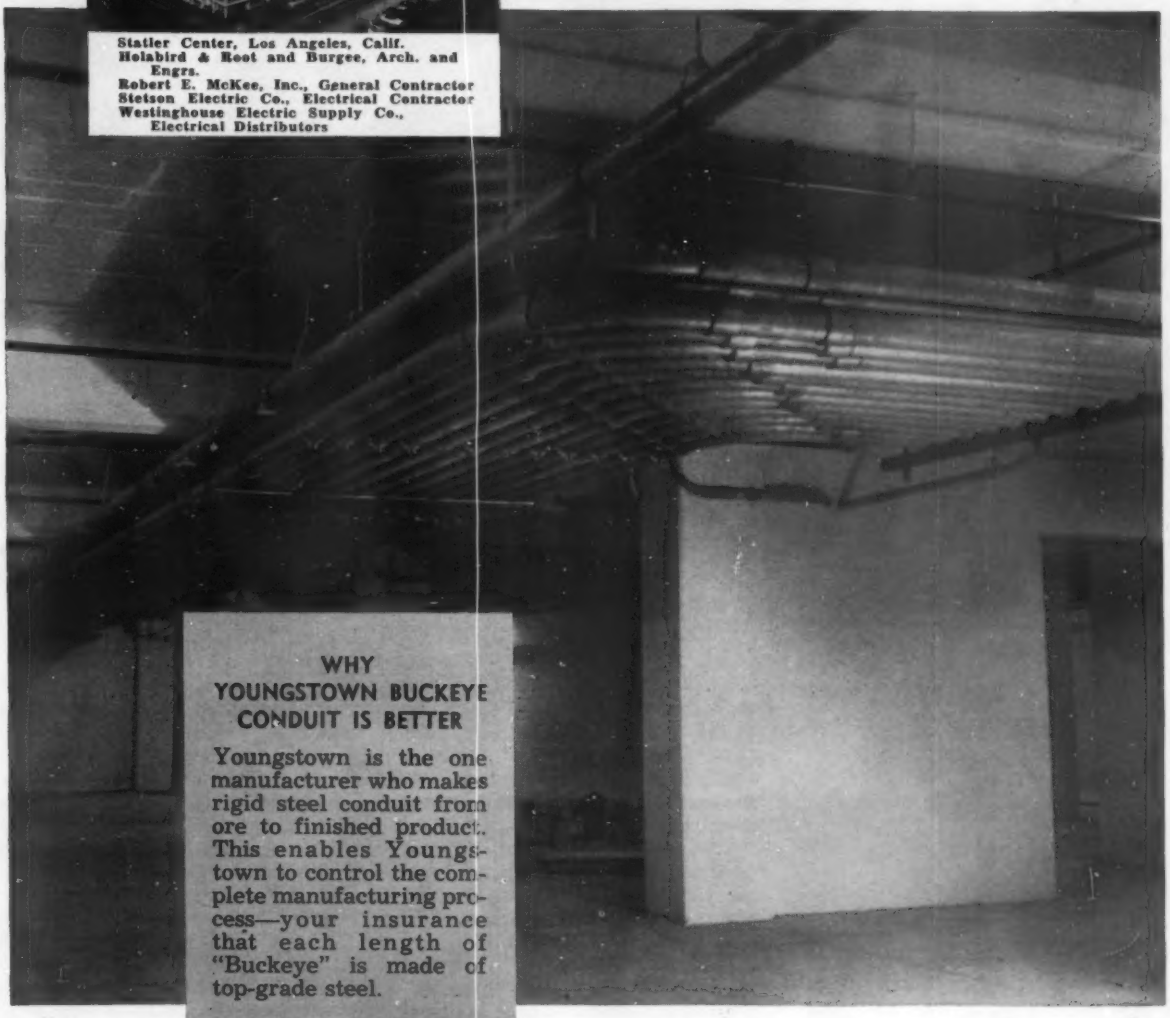

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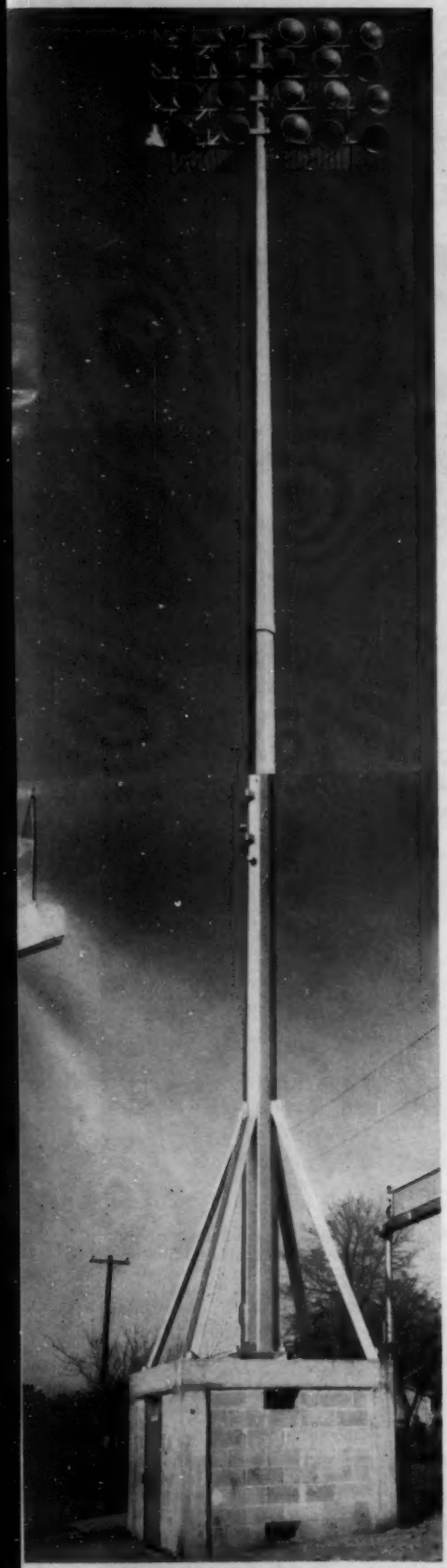
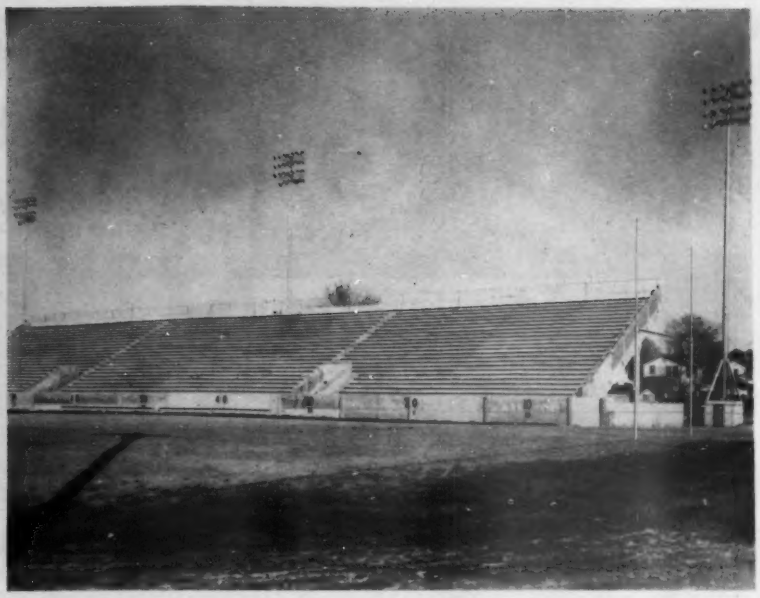




New techniques

◆ PRAISE FOR THE NEW Texarkana, Texas, high school athletic field, Grim Stadium, with 30 to 32 footcandles of light in the center of the field, has been sponstaneous from all quarters.

Those with technical lighting background observe it from a critical viewpoint and find it far superior to the accepted standard of high school stadium lighting.

Spectators at night football games and other events have expressed enthusiastic approval, their enjoyment having been heightened by outstanding "seeability" in the stadium. This factor has resulted in better attendance, too.

Electrical contractors, manufacturers of lighting equipment, athletic coaches and school superintendents have appraised this as one of the best-lighted high school stadiums in the South. So we, naturally, are proud of Grim Stadium, for the floodlighting was designed and wiring recommendations were supplied by the lighting department of the Southwestern Gas and Electric Co., with the Longview Electric Co., of Longview, Texas, as contractor.

Close-up of one of the unique transformer vaults at pole base and a fixture bank. Of particular interest are the corner posts of the vault which are set in an unusual concrete construction.

New techniques used

But this discussion will be devoted almost entirely to principal points of interest to contractors, and others concerned with outdoor lighting, for Grim Stadium involves some techniques that, we are satisfied, are entirely new in the field.

In this, as in many other cases, accompanying photographs tell the story with more effectiveness than words.

The general view of the vacant east stands, shows three of the six steel poles and fixture banks. You will notice the absence of transformers and wiring which, in turn, gives the poles their clean lines. This is all accomplished by our

Three of the six steel poles and fixture banks are visible behind the vacant east stands of Grim Stadium, Texarkana, Texas high school athletic field.

The field under actual playing conditions gives an idea of the fine diffusion of light achieved by the installation of the six fixture banks which are regulated to provide proper illumination for the game and spectator convenience.

in stadium lighting

by H. M. Perkins
Division Sales Manager
Southwestern Gas and Electric Co.
Texarkana, Ark.

original design of transformer vaults located at the base of the poles.

Unique vaults

Another photograph affords a close-up of one of the transformer vaults at a pole base, and a close-up of the fixture bank. Construction features of this vault should prove of exceptional interest.

Perhaps chief among these features are the corner posts. Each corner consists of a 12-inch square concrete pile, each pile extending 11 feet below ground surface and flaring out into a bell bottom at the subterranean base. Anchored into each pile, or corner post, is a bolt, two inches in diameter and eight feet long.

Although the transformer vault is supporting an estimated weight of 55,000 pounds and though the base of the pole is sitting in the center of the top of the vault, the weight is evenly distributed through the use of four steel braces which are anchored to the four corners of the vault and welded to the pole. This assures stability of the pole under any climatic conditions.

The pole is held in place at the base by four, two-inch diameter bolts which are attached to a steel plate inserted in the 12-inch thick bed of concrete, which forms the top. Nuts and washers hold the pole and the braces in place. Steel wedges were used under the base of the pole for leveling purposes.

Manual switch provided

After the concrete floor (or top) was poured, the walls were filled in with cinder blocks to complete the wall construction. Each vault contains a 25-kva transformer and, placed at the right of each door, is a 14.4-kv single-phase, single-pole 15-ampere oil switch for manual operation. This precaution is taken in case of transformer trouble or for any reason of having to enter the vault when the main switch is open. Eighty-foot steel Kerrigan poles were used and placed on top of the six-foot transformer vaults, giving an over-all height of 86 feet from ground to top.

It should be mentioned that having transformers in these vaults and at ground level makes it possible, in event of a failure, to replace a transformer in a matter of minutes.

The fixture bank contains 24 Crouse-Hinds aluminum-enclosed floodlights, with beam spreads of 60 to 90 degrees. Each of the 24 luminaires contains a 1500 PS-52 lamp, burning at 100 per-cent above rated voltage.

On the bottom row of the floodlight bank of six fixtures, only the two inside fixtures are focused directly upon the field. The two end fixtures are focused into the parking areas. The other two fixtures are focused into the stands and are equipped with stippled lens to give greater diffusion of light in the seating area.

Exit lighting

These parking and seating fixtures are separately controlled and are designed to be turned on before the teams appear on the field, at which time they are turned off and the playing lights are turned on. The reverse procedure is used when

(*Continued on page* 71)

(Left) Aerial view of St. Regis Paper Mill. (Above) C. M. Blount checks "couch" d-c panel with preamplifier in foreground.

Today it's pushbutton industry . . .

Electronic equipment demands preventive

◆ PUSHBUTTON CONTROL and electronic operation, long talked of as the ultimate objective in manufacturing processes of many types, have been carried out to a high degree in the new pulp and paper mill of the St. Regis Paper Co., at Jacksonville, Fla. More complex than conventional electric controls, the electronic controls installed in this plant call for a carefully planned preventive maintenance program which is accomplished by the company's own specially trained crew of 16 under the direction of Lester M. Kapp, electrical superintendent.

Years ago, the much simpler electric controls in a pulp mill could be handled and maintained by one electrician. Today the completely automatic and electronically controlled St. Regis mill requires the services of two men on each shift, aided by intricate and accurate testing devices of the latest types for constant checking of equipment and voltage. The plant operates continuously on three eight-hour shifts a day, seven days a week. A minor failure somewhere along the line can result in a costly shutdown, which may last only an hour or so if the plant doesn't lose steam, or several hours if it does.

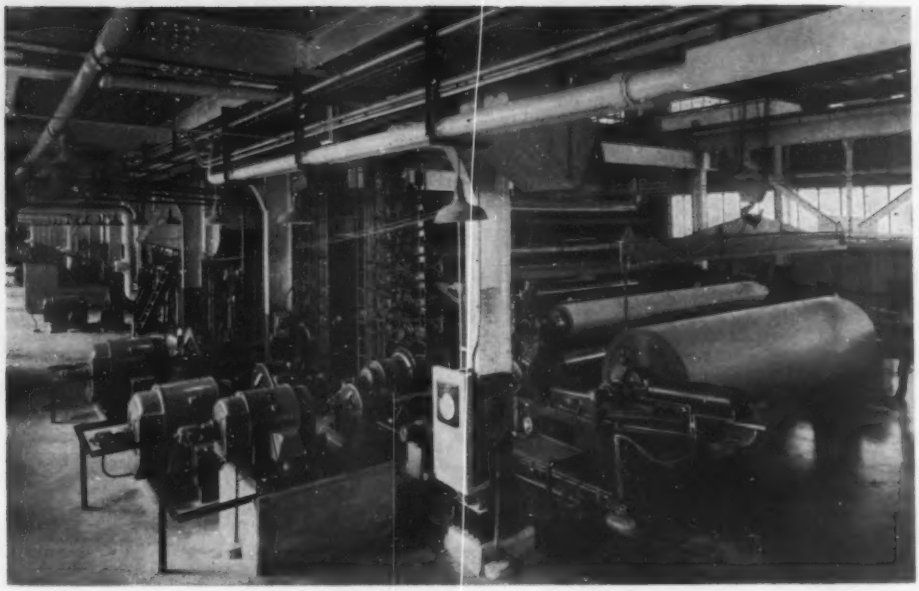
Package installation

A complete electrical system, engineered as a unit, was installed in the plant from the woodyard to finishing room by the General Electric Co., whose experts also worked with the St. Regis staff in the training of a maintenance crew. If replacements on this crew are required, a journeyman electrician is usually the best qualified candidate, but even he will require special training in electronics.

Training on the job has been found effective at the St. Regis plant provided it is supplemented by outside study. An electrician teams up with an electronics man to learn the practical workings of the maintenance job, but he is encouraged to take night courses in electronics at the Jacksonville School of Technology. If such a school were not available, prescribed reading and study of technical books or a correspondence school course might serve the same ends.

Electric power for the plant is generated from steam in a turbine room adjoining the boiler room. Equipment consists of two 6,000 kw, 4,160-volt a-c, .80 pf turbogenerators and the electric feeder distribution switchgear. Each unit is designed for operation with steam at the throttle of 625 lb. gauge and a total temperature of 825 deg. F., but actual operation has been at 750 deg. F. total temperature. One unit is provided with a 9,500 sq. ft. surface condenser, condensate pumps, air ejectors and required auxiliary equipment and is arranged for extraction of steam at 65 lbs. per sq. in. gauge. The other unit is arranged for extraction at 165 lbs. per sq. in. gauge and exhausts at a back pressure of 65 lbs. per sq. in. gauge.

From the turbine room switchboard, electric power distribution consists of transmission at 4,160



Heart of any paper mill is the paper machines. (Left) Back end of machine showing sectional drive motors. (Below) Back tender at control panel sets draws as paper is brought over for change in grade. Shows one of sectional control panels which operates huge machine.

maintenance

by C. E. Wright

volts through feeders to the starting controls of the 4,160-volt motors (200 hp and above) and to several 1,000 and 750 kva transformer power centers located in the mill, from which the 440-volt distribution feeders are run to the various motor control and lighting centers.

Paper machine operation

The heart of a kraft paper mill, of course, is the paper machine, and it is here that electronic controls have been worked out to the finest point of efficiency yet achieved in paper making in the United States.

The paper machine, built by the Beloit Iron Works, consists of four sections totaling 71 paper dryers and 18 felt dryers, with a fourdrinier wire 230 inches wide and 120 feet long. To maintain desired paper tension, these rolls must be operated synchronously, but each section is controlled by one motor and generator. Thus they are tied in electronically but not mechanically, all synchronizing being done by electric preamplifiers.

With Amplidyne control the paper machine can be operated at speeds varying from 350 to 2,000 feet a minute, and 1,850 feet per minute has been reached in actual practice.

Since the entire output of a paper mill must go through the paper machine, reliability of performance becomes a primary factor. While the electronic components are designed to give trouble-free performance, no such complex devices can be expected to function perfectly without preventive maintenance properly applied.

The St. Regis maintenance crew, under the direction of Mr. Kapp, has been carefully trained to catch trouble when it is brewing and before it occurs. Each man has a routine to follow and makes periodic reports of his findings. Keeping contacts clean is a primary requirement. Accumulations of silver sulphide or even dust may cause a voltage drop where it isn't wanted.

Maintenance procedure

Electronic tube analysis is one of the most important phases of preventive maintenance. A card record is kept to indicate any abrupt change in tube charac-

teristics so that replacements can be made before there is any failure. Whenever the output of a tube drops below normal, there is an immediate replacement. Standard radio tubes of sturdy construction, designed for industrial use, give long, trouble-free service, but they are nevertheless checked with regularity. Amplifier tubes used in the St. Regis installation are of the high vacuum "hard" type which can be checked readily in a tube tester and their expected life predicted, thus eliminating the uncertainty attendant with "soft" type tubes.

Voltage change

The sectional drive of the paper machine at the St. Regis mill, with electronic Amplidyne speed control, is designed to minimize the effects of voltage changes should they occur. Each section is a complete, independent power unit, with generator, motor, speed detector, electronic amplifier, Amplidyne control panel and operator's cabinet. This electronic combination is said to be accurate in holding draws, fast in response, adaptable in controlling tension or speed, easy for machine tenders to operate and takes little space around the machine.

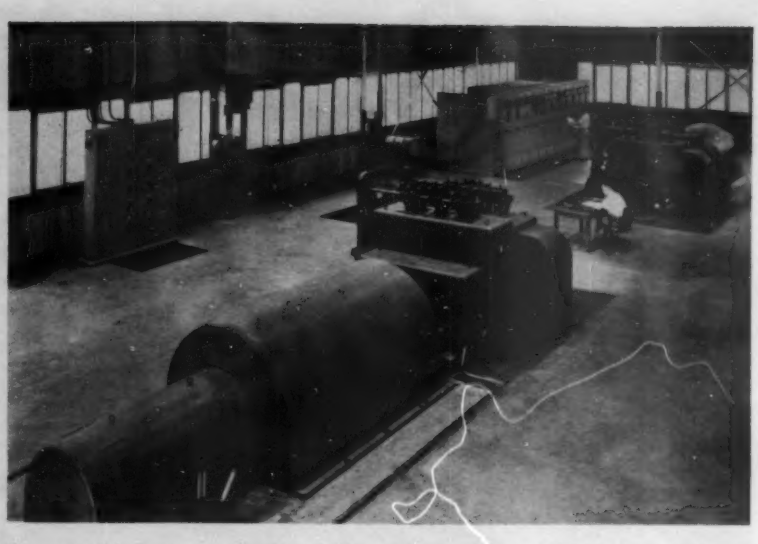
The speed detector, which is the heart of the electronic control system, is a small d-c tachometer generator, totally enclosed, which is directly coupled to the motor shaft or to the high speed pinion of the reduction gear. It monitors speed at all times and transmits this intelligence to the electronic control. The Amplidyne is a small rotating machine used to excite the field of the generator, being similar in appearance to a d-c exciter with its rotor, stator, commutator and brushes, but is capable of greater power amplification and much faster response. The electronic amplifier is a d-c amplifier for supplying field excitation to the Amplidyne.

Speed adjustment

With the sectional controls, paper machine speeds can be adjusted smoothly over a wide range. If a change is to be made in the speed of the entire machine, it can be done slowly so that paper quality is not affected by the speed transition.

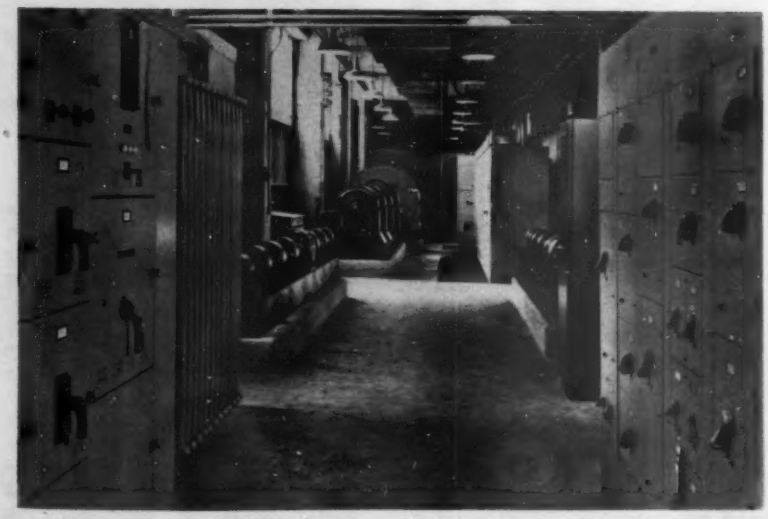
In addition to the electronic controls for normal operations, there are emergency controls, electrically or electronically operated. For

(*Continued on page* 72)



Shown in this power generating turbine room are the two 6,000-kw, 4,160-volt a-c, .80 pf, turbo-generators, and the electric feeder distribution switchgear.

Electrical equipment associated with the Koppers precipitator.



No. 2 substation showing motor generators, amplidyne generator, 440-volt distribution in left foreground and 440-volt load center at right. At right rear are cubicles for dry-end control of paper machine drives.

Residential maintenance . . .

stepping stone to big jobs

by Baron Creager

◆ APPROXIMATELY HALF of the half a million dollar gross volume for Butcher Electrical Service, Dallas, Texas, for the year 1953 is accounted for by industrial and residential maintenance, according to Ernest Butcher, head of the contracting firm.

Butcher Electrical Service ended last year with a total of 7,500 maintenance service calls and 70 per cent of these calls represented man hours invested in residential maintenance, but the materials involved represented only 40 per cent of total maintenance materials.

Incidentally, the tempo of service calls was stepped up materially in the last half of the year by the office-to-truck, two-way radio installations, described in a previous issue of ELECTRICAL SOUTH.

Ernest Butcher says that in good times, maintenance amounts to half of total volume for his company, and these are relatively good times. However, for several years after the war, maintenance accounted for 80 per cent of volume.

Butcher also believes there is a remote possibility that the time will come again when the electrical contractor must subsist on maintenance alone, as in the period of 1930 to 1936.

He hopes the time will never come again, but he was through that one, when tubing outlets cost the customer $1.25, compared to today's $12, and all the contractor hoped to get was his labor cost.

"A recession could do it," he says, "if we should have a recession again. Or we could reach the saturation point on construction, as in the period I mention when there was no construction. Of course, we have thought before that we had reached the saturation point, and then had a boom period start all over again.

"If such a time should come again, we, here, are prepared with the know-how and experience in developing maintenance business; and the stepping stone to maintenance volume is residential maintenance.

"It was the theory of my father before me in this business that when a new house is wired, that is just a start. In residential maintenance you deal with the head of the household, one who may hold you know not what position in business or industry when the contact is first made. And as for contacts, residential maintenance is, for me, an Open Sesame to the most highly important contacts. In that field I rub elbows with men it would be highly difficult, if not entirely impossible, to see during the business day."

Ernest Butcher recalls vividly two illustrations of how industrial and commercial business dangles constantly just beyond reach of the contractor, and lands in his lap through some contact resulting from residential maintenance.

Contacts from repairs

An individual came by the Butcher plant one morning with the household iron to be repaired and Butcher remonstrated that he had not been invited to bid on a rewiring job for the building, occupied by the company in which this individual is a key factor. The visitor expressed his regret, and some time later Butcher was invited to bid on a $10,000 rewiring job for a subsidiary of this company.

Butcher Electrical Service surveyed the building, submitted a bid and Butcher attended a public opening. But on opening the bids the individual previously identified said he would not announce the successful bidder then and there, but would make the announcement later. Then, by telephone, he gave Butcher an opportunity to withdraw his bid.

"You are 25 per cent low," he said, "and I don't want to see you lose money by taking this job."

Butcher's organization poured over the bid and found it right, even though it may have appeared to be out of line. Butcher insisted on taking the job, but he and his men practically lived on top of the work. Then, with the end in sight, and a profit, too, he called on three competitors whose bids were 25 per cent higher than his and discused the job with them.

Hidden raceway found

An old, three-story building was involved and all three competitors had found the only way to run conduit was by following the stairway. The 25 per cent variation was accounted for by the fact that when Butcher's men made the survey, they located an old, direct current raceway to the third floor that had been abandoned.

One Saturday afternoon an unimpressive citizen, attired in baseball cap and paint-stained trousers, wandered into the Butcher plant, asked for Butcher, saying he had been recommended, and complained:

"My wife buys every appliance she can get at a dollar down and there is so much stuff hooked onto our lines none of it will run. I want something done about it."

Butcher found an H service with four circuits and proposed to put in a 100 ampere service with 16 circuits.

"I learned later that 'dollar down' was just an expression of this man's," Butcher recalls, "but at the time I wondered about his financial ability to do this remodeling and thought my $400 price would scare him off. But he commented to the effect that it sounded too reasonable and told me to go ahead. So I put in the job and forgot about it.

(*Continued on page 72*)

Utility building becomes

Lighting installations in the new City illustrate the units of 36 manufacturers different kinds of lighting in actual

◆ WHILE THE NEW $485,000 City Utilities building in Springfield, Missouri, is a modern building furnishing much needed modernly equipped space, it also doubles in brass as an area showplace for lighting with 36 manufacturers represented.

Where the buyer of lighting or the ultimate consumer of engineered lighting is concerned with buying a package of atmosphere that goes with his business and is designed to help sell his product, the utility, the electric contractor, and the wholesaler are concerned with showing the many different kinds of lighting in actual use.

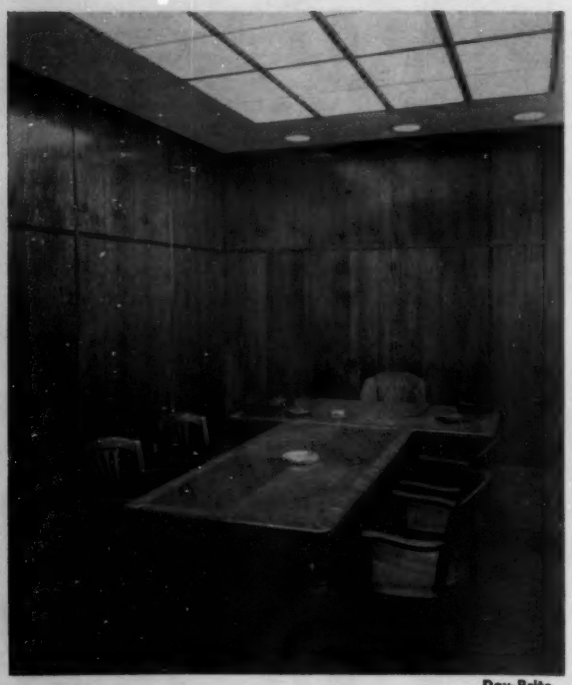
The superiority of this method over catalog specifications and photographs is graphically illustrated in the new Springfield showplace as contractors have been bringing or sending their customers for hundreds of miles. Since the utility furnishes a free lighting engineering service and leaves the selection of fixtures and the work to the contractor, this becomes a project of utmost importance to all concerned.

Variety of equipment

The use of lighting to sell lighting is, of course, not new, but seldom have so many manufacturers of lighting equipment been represented in one modern building for this purpose.

The new building was designed by Esterly and Amspatcher Co., Springfield architects who have left their mark on many of Springfield's best structures during the past 20 years. The general contractor was the Bramer Construction Co., and the building was completed in September and occupied in October of 1953.

Of the $485,000 total cost, $84,000



Day-Brite

Lighting in the manager's office features incandescent downlights at the end of the room to add warmth.

Garcy

Lighting application in the accounting office is typical of current office lighting practice with one-lamp troffers.

showplace for lighting

Utilities Building in Springfield, Missouri and provide an excellent method of showing operation.

by A. R. Compton
Lighting Engineer, City Utilities
Springfield, Mo.

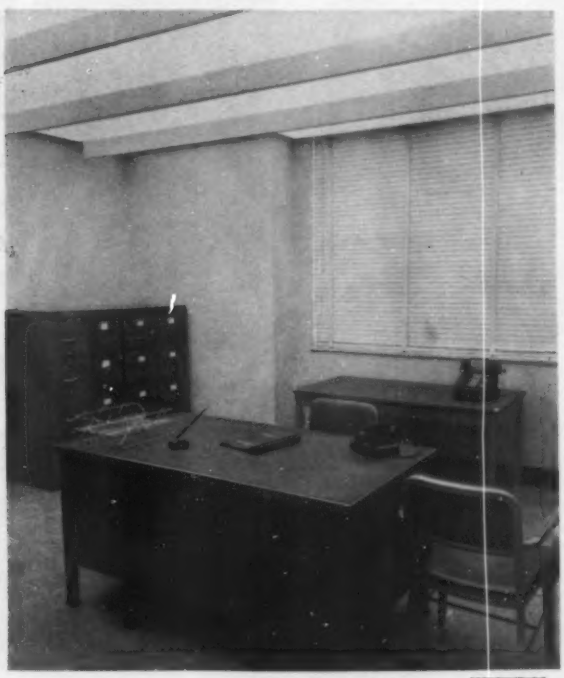
was devoted to the electrical installations — lighting, air conditioning, and ventilation.

Electrical installations

Lamon Electric Company was the electrical contractor. This company is headed by Harold Stahl, since the death of C. W. Lamon, who established the concern in 1933. Mr. Stahl was city electric inspector from 1940 to 1949, is a member of the IAEI, a charter member of the local IBEW, and his company is a member of the local NECA.

The electrical service is fed underground at 4160 volts to a basement substation through primary cubical to a busway service and the low voltage secondary switchboard. Lighting service is fed with one 250-kva single-phase transformer, and power service is fed with three 37½-kva single-phase transformers. All lighting feeders were designed for a voltage drop within 1 per cent. Switching for louvered ceiling in lobby and drafting room is controlled by low-voltage remote control switching.

Creating the effect that the building is a giant showcase of various types of lighting and what they accomplish, each department and office in the City Utilities Building features something new and different in lighting equipment available today for stores, offices and industrial buildings.



Wakefield

Latest word in the lighting of an office is found in the office of Lighting Engineer Compton.

McPhilben

Attractiveness of the marble hallways of the building is revealed in the warm white lighting used in them.

Besides a graphic display of life-size equipment in actual use in a real building, illumination levels are at correct levels for each application, which in itself in some instances illustrates to the visitor that his own light level is far too low. Such higher levels of illumination have many advantages such as greater efficiency, improved morale, reduction of absenteeism, and more pleasant and healthful working conditions.

Lighting wins customers

Lighting for the spacious main lobby was designed primarily to win customer confidence. Boasting spacious windows, the main lobby has a tile floor and marble interior, the lighting features Holophane downlights of 20 plus footcandles. Desk workers at the rear of the lobby have the advantage of handsome indirectly lighted 2-inch eggcrate Benjamin all-louvered ceiling of 50 plus footcandles with entrances and counter areas served by recessed downlights.

Luminous ceiling

My own office lighting represents the last word in office installation —a Wakefield ceiling of 125 footcandles. Three main conveniences of the unit are luminous plane lighting, acoustical baffles and air conditioning. The luminous plane lighting features no glare, no shadows, and no eye fatigue, while the acoustical baffles reduces noise and the air conditioning element eliminates the conventional type of duct work and unhealthy drafts.

Mr. Dean Miller, City Utilities manager, has a walnut paneled office with a Day-Brite Mobilex ceiling of white translucent Plexiglass acrylic plastic coffer panels which form an attractive luminous ceiling and provide diffused illumination throughout this private office. Curtis louvered glass recessed incandescent downlights at the end of the room add warmth and there is an average of 125 footcandles.

Recessed troffers used

Shielded diffusing glass panels add much to the impressive office presided over by Marvin Castleberry, assistant general manager. It is illuminated with continuous runs of Garcy Albolite flat lens recessed troffers.

High visual tasks encountered by draftsmen are better done with a full 125 footcandles from Holophane No. 9200 low-brightness recessed dropped lens in continuous parallel runs, which have the effect of elongated light sources.

Light captures beauty

The walnut paneled board room is lighted with two 16-foot continuous suspended indirect plastic Sunbeam visionaire luminaires. They enhance the beauty of the walnut conference table and the yellow leather chairs.

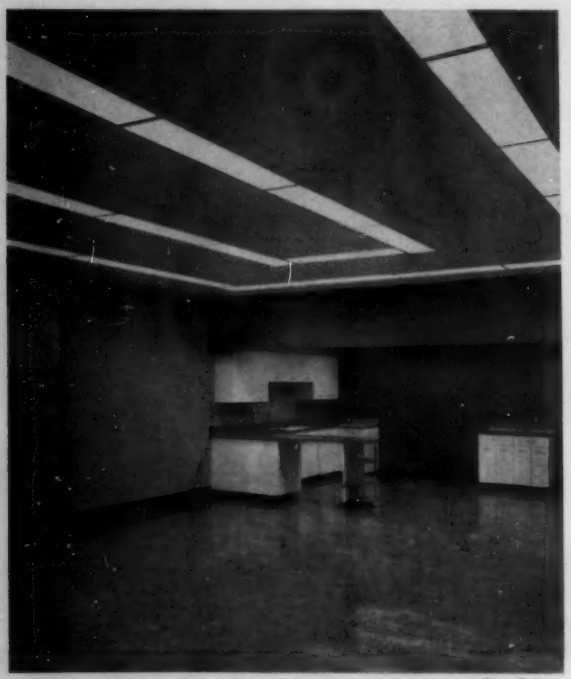
Group meetings are held in the combined conference room and demonstration kitchen. Here the lighting is in a geometric rectangular pattern using Day-Brite Albolite flat lens troffers with two continuous 16-foot parallel runs consisting of Day-Brite dropped Corning lens for the appliance section.

Slimlines in halls

Slimline lamps were used on the marble hallways on the main floor. The 48 and 54-foot runs are engineered custom built McPhilben minimum surface brightness architectural illuminated shielded glass.

One of the most interesting installations, for customers looking for new lighting applications, is in the office of Mr. Wayne Belt, purchasing agent. It consists of two Keystone Fleur-o-lier suspended direct-indirect 8-foot 4-lamp slimline fluorescent luminaires with 45 degree crosswise and lengthwise shielding.

Typical of current office lighting



Day-Brite

Conference room and demonstration kitchen were lighted so that group meetings could be held there.

Electrical service for the building is fed underground to the low voltage secondary switchboard.

practice is the lighting employed in the customer and general accounting rooms. This is a Garcy Alzak baffle recessed one-lamp troffer spaced three feet on centers which provides 60 footcandles of soft, glare free illumination.

Lights have purpose

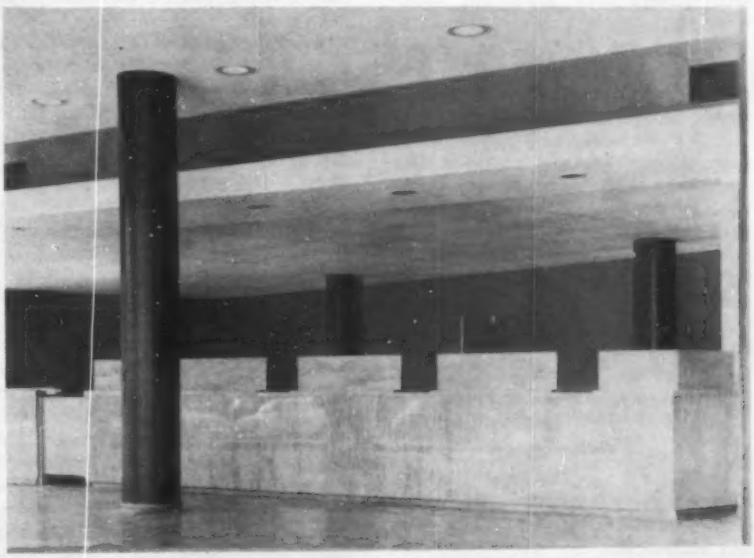
City Utilities offers its customers free lighting engineering and in the past there has been no effective way to show the effectiveness and beauty of proper lighting plus a representative array of fixtures. Each light was chosen for a specific purpose and to illustrate certain lighting effects for demonstration purposes.

Customers are taken through the building and the advantages and disadvantages for their purpose, of the various types of lighting are pointed out. While the biggest job is the programming of proper lighting for commercial and industrial customers, the service is also extended to residential users. Extra emphasis is now being placed on this free service to residential customers with the addition to the staff of Mrs. Jean Hodges, home advisor and lighting consultant. Mrs. Hodges is a graduate of General Electric's lighting school and part of her job will be to assist homeowners with residential lighting.

The personnel of Cities Utilities of Springfield who played an important part in making the organization's new building an outstanding example of its kind in the Missouri area if not in the entire country were the late C. Strong, predecessor to General Manager H. Dean Miller, Mr. Miller, M. E. Castleberry, assistant general manager, A. Richard Compton, lighting engineer, Chas. Twogood, comptroller, J. G. Thorpe, manager, electric department, Wm. Gaylord, manager, gas department, and Wayne Belt, purchasing agent.

Holophane

Even and well diffused illumination were needed in the general drafting room (above). (Below) Downlights are featured in the main lobby of marble.



Shown in front of the new building are: O. M. Griffith, manager, Electrical Department, Harry Cooper Supply Co.; Wayne Belt, City Utilities purchasing agent; Joe Amspatcher and A. C. Esterly, architects; (second row, left to right) Joe Bramer, Bramer Construction Co.; A. R. Compton, lighting engineer; Dean Miller, manager; Marvin Castleberry, assistant manager; (third row, left to right) Harold Stahl, Lamon Electric Co.; Jerry Wells, electrical sales manager, Harry Cooper Supply Co.

The national lighting bureau

Although the author directs his remarks to electrical distributors, they will be of interest to the entire electrical industry.

◆ RECENTLY, I attended our Westinghouse annual distributor association meeting at Hot Springs, Va. Our distributors had three problems that received the most attention.

Our distributors are made up of one of the three large chain operations — large independent distributors — and small independent distributors. Most of them in the full line distributor business — both apparatus and consumer products.

I believe our distributors have no monopoly on these three problems and that they are typical of the problems that are facing all of the electrical distributors today. Let us examine these three problems and see if we can determine what has brought about this condition.

Problem 1 — The necessity for distributors developing their sales organizations into hard-hitting selling operations.

There are a number of reasons for this situation; first, for the past 10 years there has been no necessity for hard-hitting selling, we have been in a sellers' market and about all that had to be done was to provide a service, a price and get an order. There wasn't too much concern if one order was lost because we knew that there were many more the next day. Consequently, sales training techniques were abandoned, hard-hitting selling was minimized, with the result that our sales organization has gotten soft.

Another reason, there has been a great deal of turnover in distributor sales organizations brought about by the military requirements, the necessity for moving salesmen up into the management part of the organization and leaving most distributors with a young sales organization who are not used to the competitive conditions we are running into today.

Another reason, there has been such a demand in defense industries in some of the newer industries . . . like electronics, atomic power, that a larger percentage of technically trained men have been diverted into these industries and are not available for the bread and butter type of business that we are all in. Not only has the distributor suffered from this loss, but so has the manufacturer.

Problem 2 — The drop off in volume distributors are now experiencing.

As I stated before, we have gone through a period where we have had a sellers' market, construction business maintained itself at an extremely high level. A considerable backlog from the Second World War was built which had to be taken care of in addition to new business. The defense program has added considerable volume to the regular market with the result that lighting has been sold in increasing volume for a number of years.

This year so far has been a surprising one in the construction field, it is much larger than anyone anticipated, however, as all of you know, the overall market is less than '53 and people are not spending money freely as they have for the past 10 years. Without exception, most industries today are looking for ways and means to increase their volume and the distributors are no different.

Problem 3 — The lowering of distributor's net profit on sales.

This is a really serious problem. Without profit a distributor cannot operate and do the things that should be done if they are to give service, increase their volume and provide a return on their investment which makes it worthwhile to be in business. What has brought about this condition?

There are many reasons you probably know better than I, but some are that the distributor organization has been built up to handle the large volume they have been receiving and their overhead is now eating up some of their gross margin.

If my assumption is correct, that you are faced with these three problems, then what I have to say about the National Lighting Bureau's activity should be of considerable interest to you because this activity can go far to correcting all three problems. However, much of that depends upon your own management ability.

Before we get into Problem 1, let us consider this problem of volume. The Industrial and Commercial Lighting Equipment Section of NEMA in 1949 recognized that some day we were going to have to go out and sell and do a job. We felt we had to know more about this business and as the result, we started an activity in an average American city to find out just what was happening in the lighting business. The survey that we ran disclosed that more than

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This article is adapted from Mr. Huerkamp's address before the 46th Annual Convention of the National Association of Electrical Distributors.

program

by E. C. Huerkamp

Chairman, Executive Committee
National Lighting Bureau, NEMA

85% of the industrial and commercial buildings were lighted to less than the minimum of I.E.S. Standards.

Contractor importance

We found that the contractor was the most important segment of the industry in selling the remodernization jobs. We put on a program with the electrical leagues, including distributors, contractors and manufacturers and in that city the sales in the one year period were far above the average in the rest of the country.

About 2 months ago we sent a questionnaire to the contractors in this city asking them if they liked the program and if they would like more of it and the unanimous answer was "yes."

Adequate light needs

But what does this 85% mean to distributors? It means that 9 out of 10 of the stores, factories, offices, schools, restaurants and other commercial buildings in your community need — and can be sold — lighting adequate to their needs.

Even with this poor selling job, let's take a quick look at the volume of lighting business from 1949 and project it through 1959 on the best information available.

The market since 1949 projected to 1959 for commercial and industrial lighting in dollars of fixture sales based on a normal rate of growth shows an increase of 108 per cent. The market for street and floodlighting sales which, although not part of the National Lighting Bureau program, will undoubtedly be affected by any activity entered into by the industry. The rate of the growth in this case is 90 per cent.

And the total of the two markets put together, represents an increase from '49 to 104 per cent.

Bear in mind that this projection is based on our normal growth and does not take into account any promotional activities such as I am going to talk about in connection with the National Lighting Bureau program.

Now let's see what would happen to our market with a promotional activity that would pay off in dividends. I told you that about one out of ten commercial and industrial buildings are lighted to minimum standards. If we only light one more of this ten to minimum standards, your commercial and industrial market rise from '54 would be at a much greater rate, and the per cent of increase would be at a much higher rate.

And if we put our commercial and industrial together with street and floodlighting, the market is a prize worth working for.

Necessity for knowledge

How are we going to correct Problem No. 1, and before we get into this subject let's not only think of our distributor salesmen, but let's think of the contractor salesmen, many of the manufacturer's salesmen, and many of the utility salesmen.

In the survey I mentioned earlier in my talk, it was proved that in over half of the cases, the electrical contractor alone was called in by the owners to recommend and install the lighting job, and I think you will agree with me that there aren't too many contractors who have an adequate knowledge of what does or does not constitute a satisfactory lighting job for his customer.

A good salesman equipped with all of the necessary facts and knowing what the customer gains by using his merchandise can sell good lighting and that is the crux of the National Lighting Bureau program.

All too many of us who make our living selling lighting installations do not have the knowledge or the know-how to sell, to layout, or advise on a lighting installation. All too many raised in the easy selling era of the last decade are finding themselves poorly equipped to go out and sell a customer something he hasn't asked for.

Co-operative program

Our program is primarily aimed at the contractor, but to put it across it is going to require the backing of distributor, manufacturer, and utility. The contractor has probably the greatest opportunity and the greatest incentive in the electrical industry to go out and sell his prospects a satisfactory lighting installation, but to do so he is going to need the cooperation of the distributor and of the utility backing him up while he represents the shock troops in this campaign.

In the last decade the technique of lighting has gone through a complete metamorphosis. The old days of an enclosing globe or an RLM reflector are passed. As techniques of lighting improve, decorating tastes change, new light sources enter into the picture, replacement installations are almost a necessity to keep up with modern building.

As labor becomes more expensive employers can be sold installations that improve output. As competition increases merchandisers can be sold installations that aid selling. It's a market that can be sold both on esthetic value and on hard-headed dollars and cents economics and from the viewpoint of the distributor, commercial and industrial lighting has been one of the most profitable segments of the electrical industry.

But this replacement market is being neglected due to inadequate preparation by lighting salesmen to exploit it. In addition, there has been insufficient public education of the need for better designed lighting installations.

The Industrial and Commercial Relighting Program has been formulated to capitalize on this opportunity, and to supply the information, guidance and inspiration to local groups promoting sales in each community.

In Committee meetings over the last two years, the program has been defined, designed, refined, realigned, enshrined and occasionally consigned. And now, after that long period of gestation, it's about to be confined.

How program works

In its full development, the program will consist of four major parts:

Sales training to guide and give confidence to the lighting salesman;

Technical training to prepare him to lay out a lighting installation that will supply illumination to industry standards;

Certification to assure adherence to these established standards, while providing a selling tool;

Promotion to aid the selling operation.

Other than the national promotion operation, the program is de-

(*Continued on page 73*)

Recent Code interpretations

◆ A SERIES of six official interpretations of the 1953 National Electrical Code have been released by the National Electrical Code Committee of the National Fire Protection Association, and were announced recently by Charles L. Smith, secretary of the code committee and electrical field engineer of the NFPA.

Subjects dealt with in these latest official interpretations were: Hospital operating room circuits; use of thermostats; clearance of conductors over roofs; ventilation of transformer vaults; seals required in conduit runs; and, circuit breaker trips.

The interpretations were reviewed by the NFPA Electrical Correlating Committee at its last regular meeting (May 18, 1954) in accordance with established code interpretation procedure.

The full texts of the interpretations follow:

Interpretation No. 398

Section 5135; Hospital Operating Room Circuits.

Statement: Paragraph f of Section 5135 of the 1953 edition of the National Electrical Code, requires that each circuit within an anesthetizing location be supplied from an ungrounded distribution system which shall be isolated from any distribution system supplying other areas.

Question No. 1: Is it required that each circuit have separate isolating means?

Answer: No.

Question No. 2: Is it permissible to use one isolating means to supply more than one circuit in a single location?

Answer: Yes.

Question No. 3: Is it permissible to use one isolating means to supply more than one location?

Answer: Yes, but subject to the current limitation of 2 milliamperes required in subparagraph 4 of paragraph f of Section 5135.

Interpretation No. 399

Section 4277: Use of Thermostats

Statement: In a 115 volt ac, two-wire, oil-burner circuit supplied by a properly grounded service, it is proposed to incorporate a single pole line voltage thermostat in the grounded neutral wire. The oil burner is properly protected by safety controls, so that it will be disconnected in the event of abnormal operation. The thermostat complies with the requirements of paragraph b of Section 4277 in that it does not have "on" and "off" positions.

Question No. 1: Is the location of this single pole thermostat in the grounded circuit conductor contrary to the intent of Section 3801 of the National Electrical Cord?

Answer: No.

Question No. 2: Is Section 2599 applicable to the proposed use of this thermostat?

Answer: No.

Interpretation No. 400

Section 2322: Clearance of Conductors Over Roofs

Question No. 1: In a building with a flat roof with no ready access such as by means of a permanent ladder or a scuttle hole, would service conductors operating at a voltage between them not in excess of 300 volts meet the intent of paragraph 'a' of Section 2322 if they had a clearance of 3' from the roof?

Answer: No.

Question No. 2: In a building with a flat roof, but with a scuttle hole and permanent ladder attached to the wall adjacent to the scuttle hole, would a 3' clearance of service conductors operating at a voltage between them not in excess of 300 volts, be in compliance with paragraph a of Section 2322, where only roof maintenance personnel would have reason to work on the roof?

Answer: No.

Interpretation No. 401

Article 450: Ventilation of Transformer vaults

Question: Is it the intent of Article 450 to require ventilation in a vault housing a water-cooled transformer where the design of the transformer and the flow of water are judged adequate to keep the transformer temperature well within safe operating limits under normal operating conditions for the installation?

Answer: No.

Interpretation No. 402

Article 500: Seals Required in Conduit Runs

Statement: A 3" conduit containing four 250 MCM conductors, 120-208 volts, leaves a transformer room and extends 120' to a power distribution panel. No fittings other than couplings are in the run. Walls will be erected between the panel and the transformer vault to enclose a room through which the feeder will run. This room will be a hazardous area, containing gasoline vapors.

Question: Does Article 500 of the National Electrical Code require that this conduit run, which passes through but does not serve anything in the room, be dismantled and sealing fittings inserted at the walls of the hazardous area?

Answer: Yes, see subparagraph a 3 of Section 5015 of the 1953 Code.

Interpretation No. 403

Section 2354: Circuit Breaker Trips

Statement: A manually-operable circuit breaker is equipped with a handle for closing and a push button for tripping, both of which are for mechanical operation by the hand. The tripping mechanism is entirely mechanical.

Question: Is it the intent of Section 2354 to prohibit the use of such a circuit breaker as the service disconnecting means?

Answer: No.

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Know the law . . .

Importance of contract implications

by Arthur L. H. Street

Code requirements implied in contracts

◆ EVERY electrical contractor should understand that when he undertakes to install wiring and other electrical work, he must do the work according to such municipal and statutory requirements as may be fixed by ordinance or state law. Furthermore, in the absence of any specifications laid down by ordinance or statute directly, he must comply with provisions of an established code of the electrical industry applicable to the particular contract.

Alabama decision

The point is illustrated by a decision rendered by the Alabama Supreme Court some years ago in the case of Alabama Power Co. v. McIntosh, 122 Southern Reporter 677.

The power company hired a contractor to clean, wax and polish the floor of its offices by using steel wool and gasoline. In the process a spark from an electrical fixture in the floor caused an explosion which fatally injured an employee of the contractor. Suit was brought against the power company, and it unsuccessfully appealed from a judgment against it for damages on account of the death.

Negligent installation

Liability was based on the fact that installation of the particular electric floor fixture was negligent, being violative of the National Electrical Code then in force, 1929. So far as it is of special interest to an electrical contractor, the opinion of the Supreme Court reads:

"The type of floor fixture alleged to have been negligently maintained * * * is forbidden by the 'National Electrical Code' for interior wiring. Evidence went to the effect that this Code is the standard, is used by all competent wiremen, is called by one witness the 'interior wireman's Bible.'

Experience is basis

"* * * The Code, being the expression of the matured judgment and experience of men in that business, becomes evidence of correct appliances for such places, and evidence that the use of fixtures forbidden by it is negligence. * * *

"There is evidence that the special reason for forbidding this fixture in floors is mechanical injury to the appliance by the entry of dust and water; but an ultimate end is also stated to be fire prevention. It may be said the electrician in all internal wiring is charged with the duty to look out for the prevention of fires in all ways which the electric spark may communicate.

"Negligence in this regard endangering the building may also be regarded as endangering the persons rightfully employed therein."

Important point

The last sentence is a very important warning, in that it shows that if an electrical contractor has negligently installed a dangerous situation, his liability will not necessarily be limited to the owner of the building but may, in certain circumstances, extend to third persons who happen to be present when an accident occurs, such as occurred in the Alabama case.

When the contract must be broken

◆ HERE IS ONE of the numerous points of law that every electrical contractor should bear in mind, whether he contracts directly with the owner of a structure in which he is to install electrical wiring and equipment or whether he is a subcontractor: If he neglects to proceed with the work as promptly as his contract requires, or with reasonable promptness if the contract does not call for completion within a fixed time, or if he does the work defectively and refuses to correct the defects promptly after being warned that the contract will be terminated, the owner or general contractor with whom the electrical contractor is under contract can terminate the contract, have the work completed by another electrical contractor and hold the first electrical contractor liable for the cost of repairs and completion. In this way, the defaulting contractor may turn out to be a serious loser.

The legal point above stated is illustrated by a decision rendered by the Louisiana Court of Appeal, New Orleans, in the case of Southern Builders Material Co. v. Foto, 122 Southern Reports 914. The case involved installation by a subcontractor of steel-rolling doors in a building that was being constructed but the same rules of law would apply to a subcontract.

Bonder escaped liability

The work was unreasonably delayed and some of it was defective. The subcontractor was repeatedly warned of the delays and unsatisfactory work, and finally warned that the work would be taken over, which was done. It cost the contractor who took over $700 more to complete the work than if the subcontractor had complied with his contract. It was decided that the contractor was entitled to hold the subcontractor liable for this.

(*Continued on page* 74)

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New developments

that help to build business

Powder-actuated tools save installation time

POWDER-ACTUATED tools, first developed for Navy damage control crews during World War II, are speeding electrical construction on many large installations.

The six-pound Ramset fastening tool, which uses a powder charge to drive pins or threaded studs into steel or concrete, has cut the time necessary to seat the studs which support lighting fixtures from fifteen minutes a stud to a little over a minute—a saving of more than 93 per cent in time.

In one particular building alone this meant a saving of approximately 3,000 man hours. More than 15,000 studs will be required in a new medical science building before its completion next summer, according to Martin Franz, general foreman for the T. Frederick Jackson Co., electrical contractors on the job.

"The powder-actuated method not only eliminates tedious overhead drilling but seats the stud more firmly than conventional methods of anchoring," Mr. Franz said.

"In tests we ran on powder-driven studs we found that they easily supported a weight of 160 pounds—a margin of 300 per cent over the specified load."

Reason for the superior holding power of powder-driven pins and studs, according to Ramset officials, lies in the molecular displacement which takes place when the fastener is driven into steel or concrete at ultra-high speed.

Ramset Fasteners are manufactured in Cleveland by a Division of Olin Industries, Inc.

Ramset powder-charged tools are speeding installation of lighting fixture studs on this concrete ceiling. The tool, first developed for Navy damage control crews in World War II, drives one stud a minute instead of the fifteen minutes required to seat studs by drilling and anchoring.

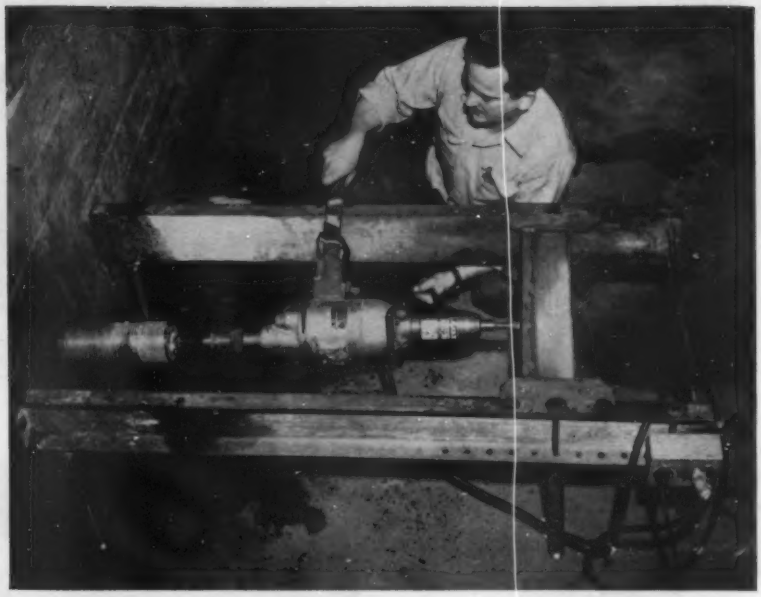
Improvised jack frame provides drill pressure

ELECTRICAL CONTRACTORS are depending more and more on core type masonry drills to cut holes in concrete floors and walls for passage of bus ducts, conduit, etc., because of their speedy, economical and quiet operation.

For maximum efficiency in such masonry drilling, the Tilden Tool Manufacturing Co., of San Clemente, Calif., and Chicago, recommends the application of 500 to 2,000 pounds pressure—depending on the required size of drill and opening—during operation of their Rotary Konkrete Kore Drills.

Since it is often difficult to set up a lever system to provide adequate pressure in the field, Continental Electrical Construction Co. of Chicago has devised an adjustable steel frame to support a drill and hydraulic jack assembly for horizontal or vertical drilling under proper pressure.

The H-frame of this unique assembly consists of two 6-inch steel channel uprights, each 62 inches long. The adjustable crosspiece is made of two 24-inch lengths of 4-inch channel mounted back-to-back with suitable spacers and flange end plates. Three matching bolt holes in each flange plate and the uprights provide for vertical adjustment. The jack adjusting screw plate seats on an underside "rail" arrangement of the crosspiece which permits lateral adjustment for drilling up to four 3-inch diameter holes side by side with each positioning of the frame. The base of the 3-ton hydraulic jack is bolted to the housing of a standard 1¼ inch, 250 rpm, heavy duty electric drill. The H-frame anchors to floor or wall with two ½ inch bolts and shields.



H-frame for this 4-inch diameter drill must be fastened to the wall with anchor-bolts in order to build up pressure for its use.

For horizontal drilling, the frame is supported on four conduit legs held by threaded hubs welded to the frame, adjustable to desired elevation of holes being cut in wall. The pipe legs are removed for vertical drilling.

A clamp-on switch box provides electrical control and connection. It contains a standard toggle-type motor switch with thermal overload protection, a female receptacle for the drill cord and a male receptacle for an extension cord connection.

For further details on Tilden Rotary Konkrete Kore Drills, write to the Tilden Tool Manufacturing Co., 209 Los Molinos, San Clemente, Calif., or 7111 N. Glenwood Ave., Chicago 26, Ill.

Automatic garage doors no longer luxury item

DEALERS in electrical equipment, including radio, TV, and electronics, can now attract new customers by a product once considered a high cost luxury item, but which now can be bought at "home appliance" prices—the automatic garage-door opener.

The Lectro Door Company, in Los Angeles, Cal., has developed a mechanism that is so low in price —plus being FHA approved—as to be within the financial reach of everyone.

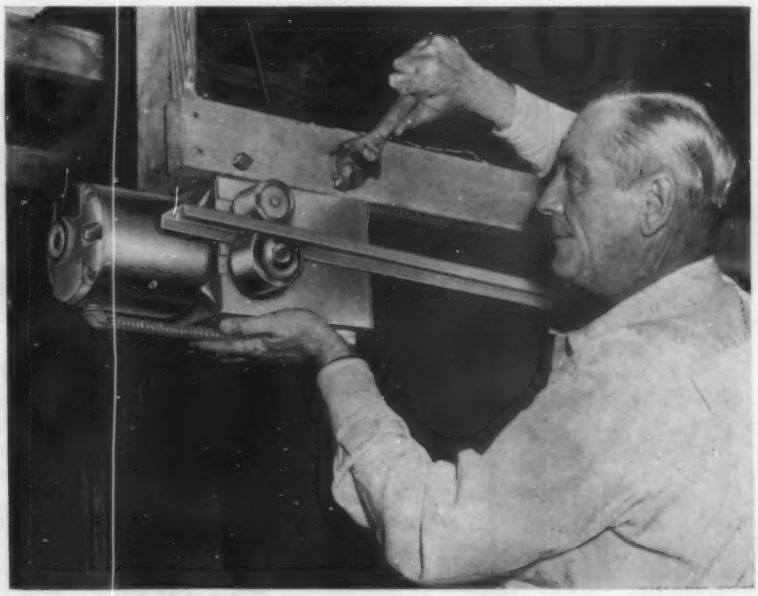
Ranged from $64.50 to $115.50 (the cost to dealers), the electric door mechanism is easily installed and can be operated by one of three methods. Most appealing of these—from the angle of low cost as well as convenience—is the pneumatic tube device which stretches across the driveway and responds to the pressure of car wheels. Compared to the rubber tube "bell ringers" in filling stations, its difference lies in its requirement of 500 pounds pressure before setting off the mechanism within the garage that gives you that electric magic of "Open Sesame!"

With the price of this tube device less than $70 to the dealer, contractors and builders have endorsed its use in several community developments.

One of the least expensive but most decorative devices is the electric key method, operating from a residence lamp post along the driveway. For persons with homes already built without that lamp post, however, the cost of the post would be an extra.

For persons of the Buck Rogers "let's-press-a-magic-button" type of mind, the most expensive garage door is operated by a separate unit within the automobile, thus giving the driver the satisfaction of influencing an exterior object by means of radio control. This method, once costing several hundreds of dollars in the pioneer field, is now reduced through Lectro Door Company's simplification of mech-

(*Continued on page* 71)

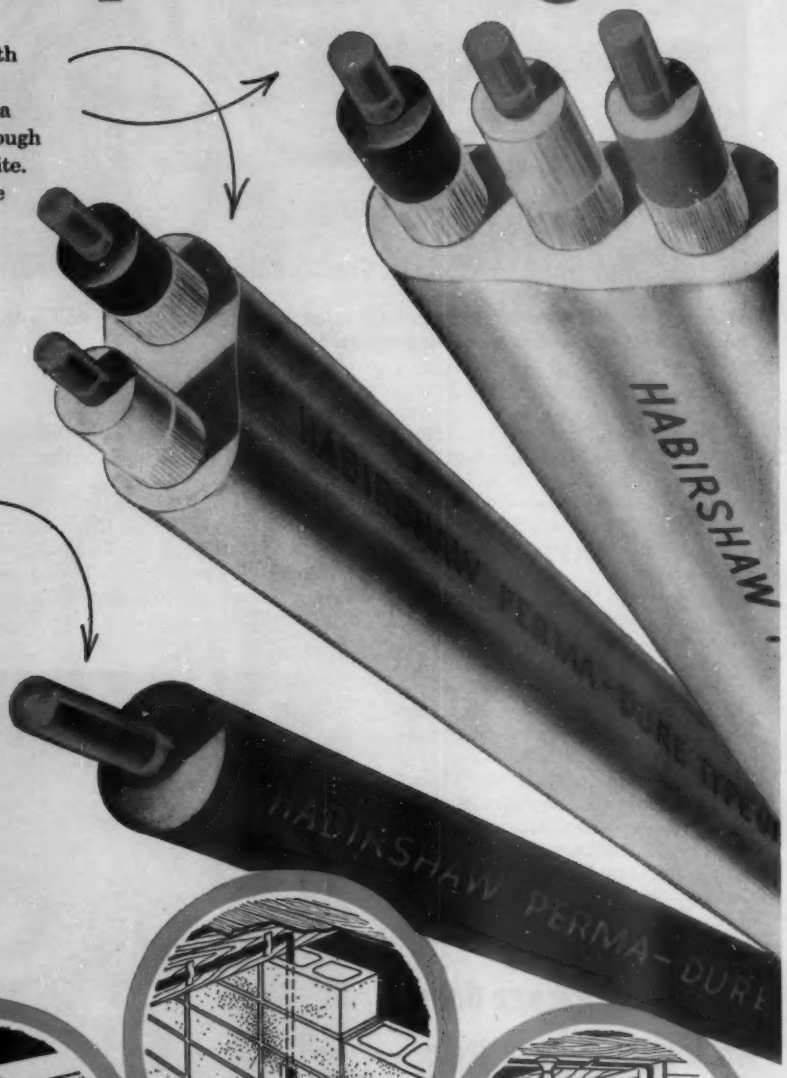


This new mechanism can lift open a garage door by radio control by automobile, a key switch on a lamp post alongside the driveway, or a pneumatic hose across the driveway, requiring pressure of car wheels.

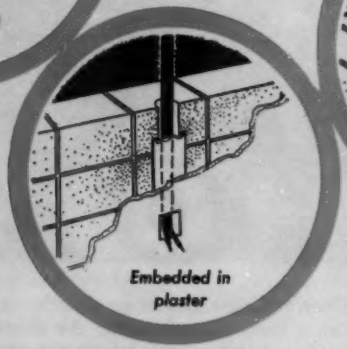
Phelps Dodge

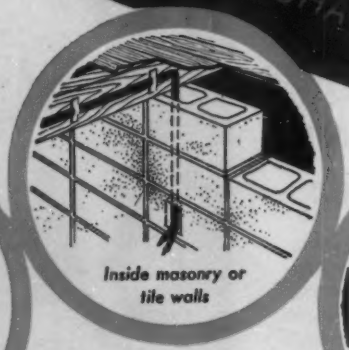
PERMA-DURE two or three conductor cable is insulated with Habirdure, glass wrapped. Conductors laid parallel under a Habirdure sheath. Sizes 14 through 10 AWG. Standard color is white. Underwriters approved as Type UF and Type NMC-600 volts.

PERMA-DURE single conductor is insulated with Habirdure (thermoplastic). Sizes 14 through 8 AWG (solid) and 6 through 4 AWG (seven strand). Standard color is black. Underwriters approved as Type UF-600 volts.



Direct burial in earth


Embedded in plaster


Inside masonry or tile walls

Exposed location in dry, damp or corrosive conditions

Multi-purpose

Perma-Dure!

An Economical, Dependable Cable for

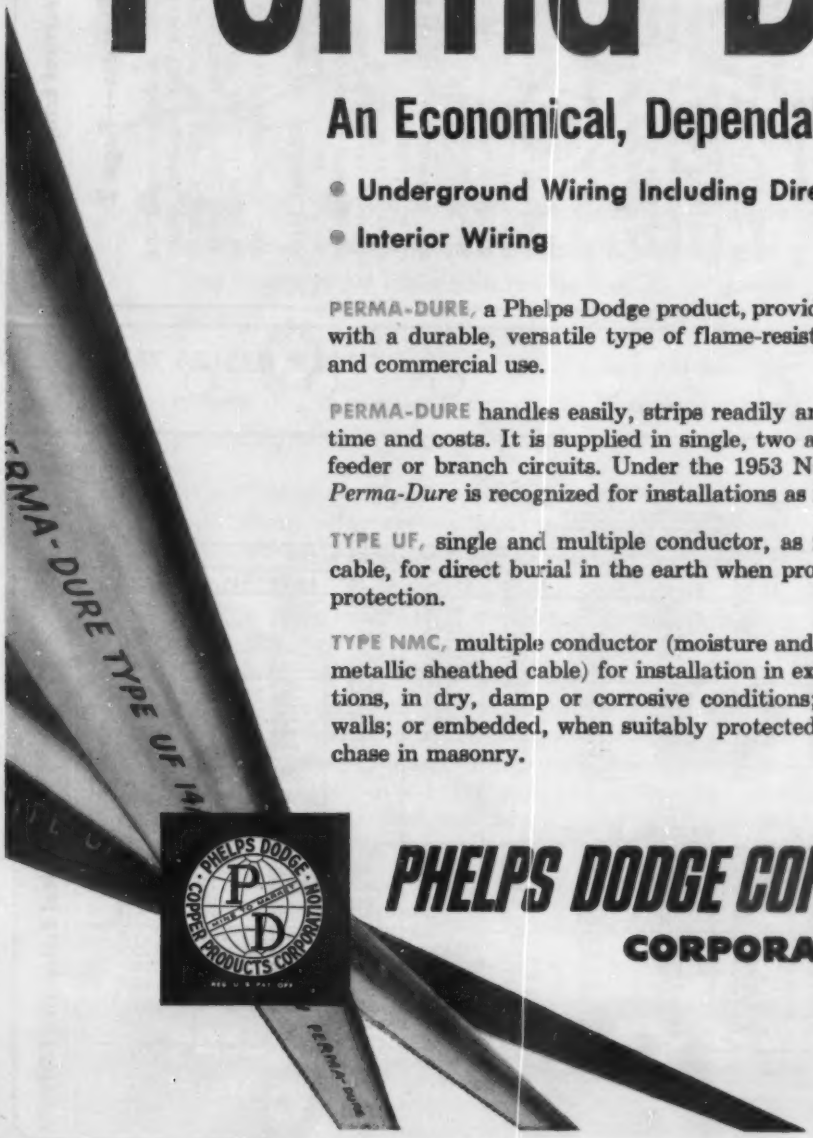
- **Underground Wiring Including Direct Burial**
- **Interior Wiring**

PERMA-DURE, a Phelps Dodge product, provides electrical contractors with a durable, versatile type of flame-resistant cable for industrial and commercial use.

PERMA-DURE handles easily, strips readily and helps cut installation time and costs. It is supplied in single, two and three conductors for feeder or branch circuits. Under the 1953 National Electrical Code, *Perma-Dure* is recognized for installations as follows:

TYPE UF, single and multiple conductor, as feeder or branch circuit cable, for direct burial in the earth when provided with over-current protection.

TYPE NMC, multiple conductor (moisture and corrosion resistant non-metallic sheathed cable) for installation in exposed or concealed locations, in dry, damp or corrosive conditions; inside masonry or tile walls; or embedded, when suitably protected, in plaster and shallow chase in masonry.



PHELPS DODGE COPPER PRODUCTS CORPORATION

Estimating—A Continuing Process—Page 2

Most labor units, such as those given in the accompanying tabulations represent the average labor time required under ideal conditions. The problem then is how to revise these so as to take into account the special conditions that may apply. Following are some of the special conditions that must be given consideration; some or all may apply to each new contract.

Type of Project. Electrical installations for different types of occupancies vary greatly in the complexity of the installation and therefore in the labor required to provide for the necessary study of blueprints, making special layouts, and special supervision. At one extreme would be the simple warehouse or small store; at the other extreme would be an industrial plant with complicated control equipment, for example.

Size of Project. Larger projects generally permit more continuous use of manpower assigned to the job. Consequently, on jobs above a certain size, as to square feet of area, labor units may be used without adjustment. For smaller jobs, the labor units may require adjustment upward as the size of the job becomes smaller.

Weather. Some types of jobs are especially affected by weather. Such contracts may be speculative, but careful use of long range forecasts, and adjustments for anticipated bad weather will reduce the speculative nature of such estimates.

Working Conditions. Always determine as well as possible the working conditions such as construction space, floor conditions, and any other factors that might affect working conditions. Plans should be studied to determine relation of electrical equipment to other mechanical services. Solid floors and heated areas contribute to labor efficiency.

Labor Saving Tools. Some types of jobs lend themselves to better use of labor saving tools and equipment with resulting lower unit labor costs.

Labor Market and Efficiency. This factor probably will not change suddenly, but over a period of time the condition of the labor market may have a substantial effect upon unit labor costs. When drawing upon completed job files for estimating data, be sure to take into account changes in this condition as between the time of the job file data and current conditions.

Materials Situation. In periods of shortages and slow deliveries, materials delays can greatly increase labor costs on a job. These cannot be anticipated when caused by strikes, etc., but general conditions will be known and can be taken into account.

Co-operation and Coordination. Memos as to experiences with certain architects, general contractors and other subcontractors will provide data that can be used advantageously.

ARMORED "BXL" CABLE
SURFACE INSTALLATION

NEW WORK NO CONDR'S. SIZE	HRS.-"C"	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
2/14	4.7	.059	.071	.082	.094	.106	.118	.129	.141	.153	.165	.176
2/12	4.9	.061	.074	.086	.098	.11	.123	.135	.147	.159	.172	.184
2/10	5.0	.063	.075	.088	.10	.113	.125	.138	.15	.163	.175	.188
2/8	5.3	.079	.095	.11	.126	.142	.158	.173	.189	.205	.221	.236
2/6	7.1	.089	.107	.124	.142	.16	.178	.195	.213	.231	.249	.266
3/14	4.9	.061	.074	.086	.098	.11	.123	.135	.147	.159	.172	.184
3/12	5.2	.065	.078	.091	.104	.117	.13	.143	.156	.169	.182	.195
3/10	5.9	.074	.089	.103	.118	.133	.148	.162	.177	.192	.207	.221
3/8	7.5	.094	.113	.131	.15	.169	.188	.206	.225	.244	.263	.281
3/6	8.4	.105	.126	.147	.168	.189	.21	.231	.252	.273	.294	.315
3/4	10.0	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375
					EMBEDDED IN CONCRETE							
2/14	2.6	.033	.039	.046	.052	.059	.065	.072	.078	.085	.091	.098
2/12	2.7	.034	.041	.047	.054	.061	.068	.074	.081	.088	.095	.101
2/10	2.8	.035	.042	.049	.056	.063	.07	.077	.084	.091	.098	.105
2/8	3.5	.044	.053	.061	.07	.079	.088	.096	.105	.114	.123	.131
2/6	3.9	.049	.059	.068	.078	.088	.098	.107	.117	.127	.137	.146
3/14	2.8	.035	.042	.049	.056	.063	.07	.077	.084	.091	.098	.105
3/12	2.9	.036	.044	.051	.058	.065	.073	.08	.087	.094	.102	.109
3/10	3.2	.04	.048	.056	.064	.072	.08	.088	.096	.104	.112	.12
3/8	4.1	.051	.062	.072	.082	.092	.103	.113	.123	.133	.144	.154
3/6	4.6	.058	.069	.081	.092	.104	.115	.127	.138	.15	.161	.173
3/4	5.5	.069	.083	.096	.11	.124	.138	.151	.165	.179	.193	.206

LABOR: INCLUDES INSTALLATION OF CABLE AND BUSHING AT TERMINUS, AND STRAPPING.

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Now THE NEW P&S 1500 OUTLET

With Screwless Terminals and Double Grip Contacts

- **EASY TO WIRE** —No wire loops to make. No screws to run down — a few seconds and connections are made. Time studies prove labor costs run from 4¢ to 5¢ less per outlet.
- **PRICED RIGHT** — Priced low — giving you an easy-to-wire, double grip outlet that can be used *profitably* on practically any job, large or small.

P&S 1500
P&S 1500-I (Ivory)

High quality phosphor bronze springs hold wires firmly — far exceed "pull" requirements of Underwriters' Laboratories. Vibration will not loosen them.

Double, torsional contacts of phosphor bronze give perfect, long line contact with minimum of heat — which means long life.

Strap runs through outlet and is fastened rigidly at both ends, producing a perfectly insulated back for greater safety. Plastic parts are extra sturdy. P&S 1500 has easy-find slots and washer type plaster ears — is designed for use with No. 12 and No. 14 solid wire.

Order these new, profitable outlets by P&S Catalog Number.

For Catalog Information Write Dept. ES

SAVES TIME
Just 2 Things To Do

1

Strip wires to gauge molded in back of outlet.

2

Push wires into wire holes and they are anchored securely.

Listed as approved by Underwriters' Laboratories Inc.

PASS & SEYMOUR, INC. • SYRACUSE 9, N. Y.

OFFICES: 71 Murray St., New York 7, N. Y. 1229 W. Washington Blvd., Chicago 7, Ill.

CONDUIT IN VERTICAL SHAFTS
THINWALL ON TILE

COND. SIZE	HRS. "C"	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
1/2"	3.7	.0463	.0555	.0648	.074	.0833	.0925	.1018	.111	.1203	.1295	.1388
3/4"	4.1	.0513	.0615	.0718	.082	.0923	.1025	.1128	.123	.1333	.1435	.1538
1"	4.7	.0588	.071	.0823	.094	.1058	.1175	.1293	.141	.1528	.1645	.1763
1 1/4"	6.5	.0813	.0975	.1138	.13	.1463	.1625	.1788	.195	.2113	.2275	.2438
1 1/2"	8.0	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30
2"	10.2	.1275	.153	.1785	.204	.2295	.255	.2805	.306	.3315	.357	.3825

RIGID ON TILE

1/2"	4.9	.0613	.0735	.0858	.098	.1103	.1225	.1348	.147	.1593	.1715	.1838
3/4"	5.4	.0675	.081	.0945	.108	.1215	.135	.1485	.162	.1755	.189	.2025
1"	6.3	.0788	.0945	.1103	.126	.1418	.1575	.1733	.189	.2048	.2205	.2363
1 1/4"	8.6	.1075	.129	.1505	.172	.1935	.215	.2365	.258	.2795	.301	.3225
1 1/2"	10.7	.1338	.1605	.1873	.214	.2408	.2675	.2943	.321	.3478	.3745	.4013
2"	13.6	.17	.204	.238	.272	.306	.34	.374	.408	.442	.476	.51
2 1/2"	17.3	.2163	.2595	.3028	.346	.3893	.4325	.4758	.519	.5623	.6055	.6488
3"	22.8	.285	.342	.399	.456	.513	.57	.627	.684	.741	.798	.855
4"	35.3	.4413	.5295	.6178	.706	.7943	.8825	.9708	1.059	1.147	1.236	1.324
5"	58.3	.7288	.8745	1.02	1.166	1.312	1.458	1.603	1.749	1.895	2.041	2.186
6"	82.3	1.029	1.235	1.44	1.646	1.852	2.058	2.263	2.469	2.675	2.881	3.086

LABOR: INCLUDES INSTALLATION, SECURING, AND CONNECTING TO BOXES (NO WIRE OR TAPS).
CONDITION: OPENING AT ALL FLOORS.

SPLICING CONDUCTORS
MECHANICAL CONNECTORS

WIRE SIZE	HRS. EA.	LABOR COST INSTALLED EACH AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
8	.3	.38	.45	.53	.60	.68	.75	.83	.90	.98	1.05	1.13
6	.35	.44	.53	.61	.70	.79	.88	.96	1.05	1.14	1.23	1.31
4	.4	.50	.60	.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50
2	.45	.56	.68	.79	.90	1.01	1.13	1.24	1.35	1.46	1.58	1.69
1/0	.5	.63	.75	.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88
2/0	.55	.69	.83	.96	1.10	1.24	1.38	1.51	1.65	1.79	1.93	2.06
3/0	.6	.75	.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.25
4/0	.65	.81	.98	1.14	1.30	1.46	1.63	1.79	1.95	2.11	2.28	2.44
250 MCM	.7	.88	1.05	1.23	1.40	1.58	1.75	1.93	2.10	2.28	2.45	2.63
300 MCM	.8	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
350 MCM	.85	1.06	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.76	2.98	3.19
400 MCM	.9	1.13	1.35	1.58	1.80	2.03	2.25	2.48	2.70	2.93	3.15	3.38
500 MCM	.95	1.19	1.43	1.66	1.90	2.14	2.38	2.61	2.85	3.09	3.33	3.56
750 MCM	1.0	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75
1000 MCM	1.1	1.38	1.65	1.93	2.20	2.48	2.75	3.03	3.30	3.58	3.85	4.13
1250 MCM	1.15	1.44	1.73	2.01	2.30	2.59	2.88	3.16	3.45	3.74	4.03	4.31
1500 MCM	1.2	1.50	1.80	2.10	2.40	2.70	3.00	3.30	3.60	3.90	4.20	4.50
1750 MCM	1.3	1.63	1.95	2.28	2.60	2.93	3.25	3.58	3.90	4.23	4.55	4.88
2000 MCM	1.4	1.75	2.10	2.45	2.80	3.15	3.50	3.85	4.20	4.55	4.90	5.25

LABOR: INCLUDES STRIPPING, INSTALLING CONNECTOR, TAPING & CONNECTING. REDUCE 4 OR MORE SPLICES AT ONE JUNCTION POINT BY 10%.

Electrical Estimating—III

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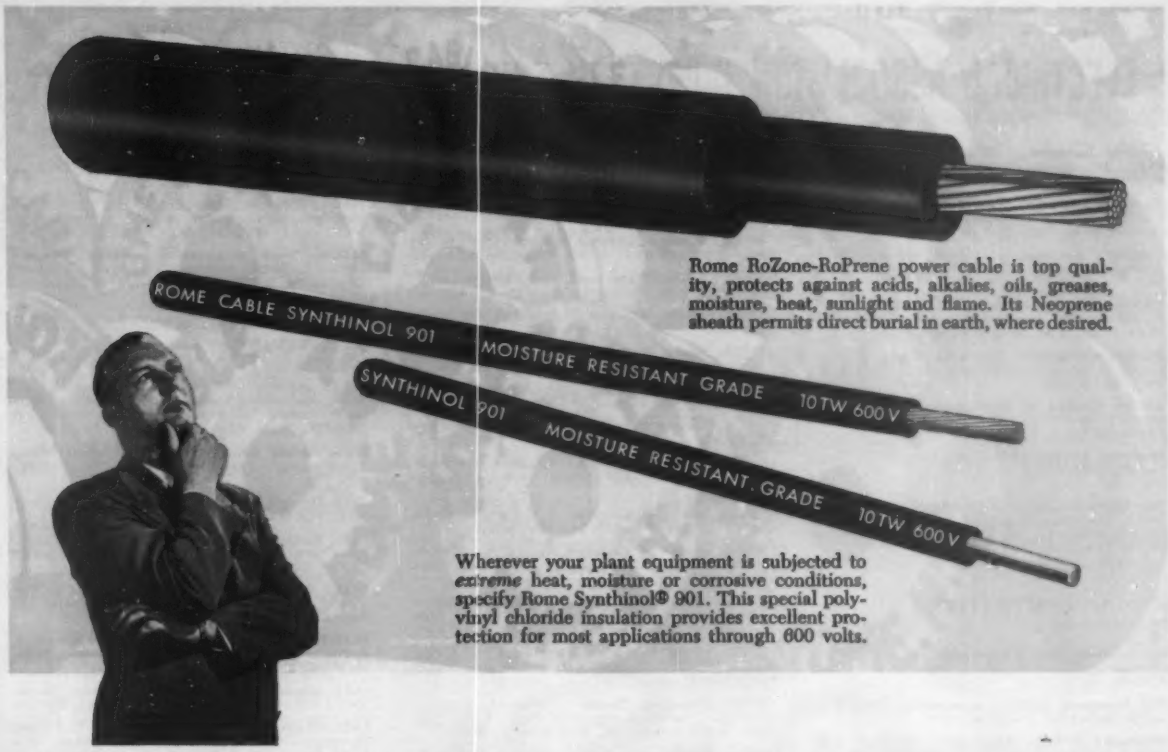

Rome RoZone-RoPrene power cable is top quality, protects against acids, alkalies, oils, greases, moisture, heat, sunlight and flame. Its Neoprene sheath permits direct burial in earth, where desired.

Wherever your plant equipment is subjected to *extreme* heat, moisture or corrosive conditions, specify Rome Synthinol® 901. This special polyvinyl chloride insulation provides excellent protection for most applications through 600 volts.

Before you install another foot of cable ...ask yourself these questions:

1. What cable do we need to handle our expanding load?

2. How can we be sure of trouble-free cable performance?

Shutdowns or production interruptions, caused by failing or inadequate power cables, can be very costly.

So here are some pointers on the questions above:

1. Compare the present electrical load with that for which your power feed system was originally designed.

Then call in your utility man, electrical contractor, or nearest Rome Cable sales engineer. All of them are trained to help your own engineers survey the present and future needs of your plant.

2. Take every step to assure lasting value in the cable you install. Guard against ionization—the electrical breakdown of air in pockets within the insulation, or especially where it has not been firmly bonded to the conductor surface or shield.

Ionization may cause such electrical effects as ozone cutting, reduced dielectric strength, or increased dielectric loss. They can all lead to premature cable failure or reduce the efficient performance life of the cable.

To assure maximum performance, specify Rome products. Every foot of Rome cable rated at 3000 volts and over is tested for ionization before shipment—just *one of many checks* to make sure the Rome cable you install will stand up now, and in the future.

For complete information about these extra-quality Rome products just return the request slip below.

It costs less to buy the best

ROME CABLE Corporation
ROME · NEW YORK
and
TORRANCE · CALIFORNIA

ROME CABLE CORPORATION, Dept. ES-7, Rome, N. Y.

Please send me items checked: ☐ Literature on Ionization,
☐ Rome Power and Control Cable Catalog,
☐ Rome Synthinol Bulletin.

Name ..... *Title* .....

Firm .....

Address .....

City ..... *Zone* ..... *State* .....

ELECTRICAL ASSOCIATION DIRECTORY FOR THE SOUTH AND SOUTHWEST

Electric Institute of Washington. William G. Hills, Managing Director, 10th and E Sts., Washington, D. C.

Electrical Clearing House of Louisville, Inc. W. D. Roach, Secretary-Treasurer, 731 W. Ormsby Ave., Louisville 3, Ky.

Electrical Association of New Orleans. E. H. Mowen, Secretary, 921 Union St., New Orleans, La.

The Electric Association of Kansas City. John S. McDermott, Executive Manager, Merchandise Mart Bldg., Kansas City 8, Mo.

St. Louis Electrical Board of Trade. Carl H. Christine, Secretary-Manager, 1221 Locust St., St. Louis 3, Mo.

Electric League of Chattanooga. Paul J. McMillian, Secretary, Sixth and Market Sts., Chattanooga 2, Tenn.

Electrical League of Norfolk. Everett T. Diggs, Secretary-Treasurer, P. O. Box 605, Norfolk 1, Va.

The Electric League of Charleston. Guilford C. Smith, Secretary-Treasurer, c/o Appalachian Electric Power Co., P. O. Box 1986, Charleston 27, W. Va.

UTILITIES

Southeastern Electric Exchange. John W. Talley, Managing Director, 303 Haas-Howell Bldg., Atlanta, Ga.

The Maryland Utilities Association. Robert L. Smith, Secretary, Frederick, Md.

Oklahoma Utilities Association. Kate A. Niblack, Secretary, Suite 2415, Oklahoma Biltmore Hotel, Oklahoma City 2, Okla.

Public Utilities Association of the Virginias. R. W. McKinnon, Executive Secretary, 5 Franklin Rd., SW, Roanoke 11, Va.

WHOLESALERS

Southeastern Electrical Wholesalers Association. M. L. Tice, Executive Vice-President, 421 Rhodes Bldg., Atlanta 3, Ga.

National Association of Electrical Distributors. Charles G. Pyle, Executive Director, 290 Madison Ave., New York 17, N. Y.

REPRESENTATIVES

Southeastern Electrical Manufacturers Representatives Club. Frank P. Bell, Secretary-Treasurer, 806 Peachtree St., NW, Atlanta 3, Ga.

Electrical Manufacturers Representatives Association, Inc. W. N. Chenoweth, Secretary, P. O. Box 75, Riderwood, Md.

Electrical Manufacturers' Representatives of Virginia, Inc. C. F. Bennett, Secretary, 205 West Grace St., Richmond 20, Va.

CONTRACTORS

Florida Association of Electrical Contractors. L. L. Dick, State Manager, 2203 Dekle Ave., Tampa 6, Fla.

Association of Independent Electrical Contractors. R. E. Neumann, Secretary, 704 Frenchmen St., New Orleans 16, La.

National Electrical Contractors Association. Clint J. Harder, Secretary-Treasurer, 1200 18th St., NW, Washington 6, D. C.

NECA, Birmingham Chapter. Ernest W. Weir, Manager, P. O. Box 1781, Birmingham, Ala.

NECA, Gulf Coast Chapter. Ernest E. Smith, Manager, 402 St. Micheal St., Box 1003, Mobile, Ala.

NECA, Central Alabama Chapter. C. A. Dart, Manager, 212 Hunter Lane, Montgomery, Ala.

NECA, Arkansas Chapter. Earl G. Fisk, Manager, 904 Center St., Little Rock, Ark.

NECA, Washington, D. C. Chapter. Harry W. Kellams, Manager, 910 17th St., NW, Washington 6, D. C.

NECA, Atlanta Chapter. George L. Peterson, Manager, 709-711 Peters Bldg., Atlanta, Ga.

NECA, Southeastern Industrial Chapter. K. D. White, 946 W. Peachtree St., NW, Atlanta, Ga.

NECA, South Georgia Chapter. R. A. Kobs, Manager, 3208 Hamilton Rd., Columbus, Ga.

NECA, North Florida Chapter. W. S. Binckley, Manager, P. O. Box 3172, Jacksonville, Fla.

NECA, South Florida Chapter. Charles J. Powers, Manager, 2607 Flagler St., Miami 36, Fla.

NECA, Kansas Chapter. Charles W. Paige, Manager, 416 Central Bldg., Topeka, Kan.

NECA, Central Kentucky Chapter. Clair W. Stille, Manager, 137 Bassett Ave., Lexington 27, Ky.

NECA, Louisville Chapter. J. C. Snyder, Manager, 120 East Brandies St., Louisville 8, Ky.

NECA, Louisiana Chapter. George A. Seaman, Acting Manager, 1642 Convention St., Baton Rouge, La.

NECA, South Louisiana Chapter. Rudolph Viener, Jr., Manager, 831 St. Peter St., New Orleans 16, La.

NECA, North Louisiana Chapter. F. J. Evans, Manager, 753 Dalzell St., P. O. Box 1210, Shreveport, La.

NECA, Maryland Chapter. Robert L. Higgins, Manager, American National Bldg., Room 305, 204 North Liberty St., Baltimore 1, Md.

NECA, North Mississippi Chapter. Woodrow C. Bryan, Manager, 4634 Cedarhurst Drive, Jackson, Miss.

NECA, Greater Kansas City Chapter, J. A. Scheffer, Manager, 2201 Grand Ave., Kansas City 8, Mo.

NECA, St. Louis Chapter. R. E. Vierheller, Manager, 611 Olive St., St. Louis 1, Mo.

NECA, Carolinas Chapter. D. L. Casey, Manager, P. O. Box 4056, Charlotte 4, N. C.

NECA, Western Oklahoma Chapter. Tom M. Rushing, Manager, 704½ North Broadway, Oklahoma City 2, Okla.

NECA, East Oklahoma Chapter. Horace Y. Strader, Manager, 111 South Norfolk St., Tulsa, Okla.

NECA, Chattanooga Chapter. W. C. Harris, Manager, 402 Chattanooga Bank Bldg., Chattanooga 2, Tenn.

NECA, Knoxville Chapter. W. G. Hoffman, 312 West Jackson Ave., Knoxville 24, Tenn.

NECA, Memphis Chapter. Raymond Calhoun, Manager, 215 Madison Ave., Memphis 3, Tenn.

NECA, Nashville Chapter. G. Paul Crowder, Manager, 115 16th Ave., North, Nashville, Tenn.

NECA, Panhandle Chapter. John H. Burt, Manager, P. O. Box 2283, Amarillo, Tex.

NECA, Central Texas Chapter. Tom Clawson, Manager, P. O. Box 881, Austin, Tex.

NECA, Texas Gulf Coast Chapter. Ray R. Hayes, Manager, P. O. Box 2049, Corpus Christi, Tex.

NECA, Northeast Texas Chapter. L. E. Martin, Manager, 1923 McKinney Ave., Dallas 1, Tex.

NECA, El Paso Chapter. John E. Blaine, Manager, 310 San Francisco St., El Paso, Tex.

NECA, North Texas Chapter. C. E. Wann, Manager, Westchester House, Apt. 102, 554 South Summit, Fort Worth, Tex.

NECA, Southeast Texas Chapter. Charles Scholibo, Manager, 1100 Richmond Ave., Houston 6, Tex.

NECA, East Texas Chapter. Harry L. Wren, Manager, P. O. Box 1226, Kilgore, Tex.

NECA, West Texas-New Mexico Chapter. Edward Strout, Manager, 105 College Ave., P. O. Box 121, Lubbock, Tex.

NECA, South Texas Chapter. Frank R. Stewart, Manager, 774 East Locust St., San Antonio 12, Tex.

NECA, Rio Grande Valley Chapter. R. N. Cummings, Manager, 607 West 4th St., Weslaco, Tex.

NECA, Virginia Chapter. Richard R. Smouse, Manager, 8916 Horsepen Rd., Richmond 26, Va.

NECA, West Virginia-Ohio Valley Chapter. James E. Swan, Manager, 510½ C St., South Charleston, W. Va.

INSPECTORS

IAEI, Alabama Chapter. Hugh Roberts, Secretary-Treasurer, Alabama Power Co., 600 North 18th St., Birmingham, Ala.

IAEI, Florida Chapter. R. H. Wellwood, Secretary-Treasurer, 2605 11th Ave., NW, Bradenton, Fla.

IAEI, Georgia Chapter. W. S. Smith, Jr., Secretary, 713 Broad St., Augusta, Ga.

IAEI, Kentucky Chapter. E. H. Rueppel, Secretary-Treasurer, 201 Citizens Bldg., Louisville 2, Ky.

IAEI, George Weiman Chapter. J. Clifton Young, Secretary-Treasurer, 317 Baronne St., New Orleans 9, La.

IAEI, North Louisiana-East Texas Chapter. H. E. Kirby, Secretary-Treasurer, P. O. Box 1094, Shreveport 80, La.

IAEI, Mississippi Chapter. C. B. Grauer, Secretary-Treasurer, P. O. Box 1790, Jackson, Miss.

IAEI, Missouri-Kansas Chapter. Frank C. Payne, Secretary-Treasurer, Kansas City Power and Light Co., 1330 Baltimore St., Kansas City 6, Mo.

IAEI, St. Louis Chapter. Neil W. Butteiger, Secretary-Treasurer, 7427 Canton Ave., University City 14, Mo.

IAEI, North Carolina Chapter. C. S. Whitaker, Secretary-Treasurer, City Hall, Durham, N. C.

IAEI, South Carolina Chapter. N. R. Darling, Secretary-Treasurer, P. O. Box 390, Columbia, S. C.

IAEI, Tennessee Chapter. R. J. Booker, Secretary-Treasurer, 404 Center Ave., Dickson, Tenn.

IAEI, Texas Chapter. R. L. Payne, Secretary-Treasurer, 3303 Schley St., Dallas, Tex.

IAEI, Texas Gulf Coast Chapter. M. W. McRaven, Secretary-Treasurer, P. O. Box 1700, Houston 1, Tex.

IAEI, Southern Section. A. M. Miller, Secretary, 910 West 30th St., Richmond 24, Va.

IAEI, Virginia Chapter. A. M. Miller, Secretary-Treasurer, 910 West 30th St., Richmond 24, Va.

IAEI, West Virginia Chapter. H. L. Parks, Secretary-Treasurer, P. O. Box 626, Charleston, W. Va.

MOTOR REPAIR SHOPS

National Industrial Service Association, Inc. Fred B. Wipperman, Executive Secretary, 818 Olive St., St. Louis 1, Mo.

NISA, Southeastern Chapter. M. E. Assalone, Secretary, 235 NW 2nd Ave., Miami 36, Fla.

NISA, Electric Motor Service Association of the District of Columbia. John W. Lainhart, Secretary, 913 E St., NW, Washington 4, D. C.

NISA, Louisville Chapter. W. C. Krauth, Secretary, 118 S. 1st St., Louisville, Ky.

NISA, New Orleans Chapter. William Dreis, Secretary, 1517 Calliope St., New Orleans, La.

NISA, Mid-South Chapter. Murphy G. Miller, Secretary, 109 Jennings Ave., Knoxville 17, Tenn.

NISA, Southwestern Chapter. George Foshee, Secretary, 203 S. Main, Fort Worth 4, Tex.

NISA, Electric Club of West Virginia. O. E. Jenkins, Secretary, c/o Guyan Machine Co., Logan, W. Va.

News of the industry

edited for Southern readers

Adequate wiring gets boost from builders

RELIEF MAY BE AHEAD for new-home buyers on the problem of getting adequate electrical capacity built into their houses at the outset as a result of recent action by the nation's organized builders.

In the first action of this kind in the history of the National Association of Home Builders, the organization has unanimously adopted a voluntary standard on electric service entrance capacity which, if followed widely by the country's builders, will give the householder 100-ampere capacity in place of the generally-found 30 to 60 ampere capacity.

The new suggested capacity agrees with the recommendation of an electrical industry committee which is drafting new national standards of wiring adequacy for residences.

Thus, for the first time, customers buying from builders who follow the NAHB voluntary standard can be sure of enough amperage available to their home distribution systems to support the heavy duty circuits they need for air conditioning, electric ranges, room coolers, dryers, and home freezers.

The average home already supports on generally inadequate service capacity, at least eight appliances of various wattage requirements and will acquire in the next 10 years another half dozen appliances, according to figures recently projected by Roger Bolin, advertising manager, Westinghouse Electric Corp. Hence, the feeling in the electrical industry is that the move of the builders toward a better standard is coming none too soon.

However, it has long been recognized that in the builders' eyes, failure of government lending agencies to place the proper appraisal value on home wiring that exceeds minimum standards has been a barrier to getting electrical adequacy into much of the new housing.

What the home owner will get where this new NAHB voluntary standard is applied by the builder, is three-wire #2 service entrance cable or 1¼ inch service conduit containing three #2 wires. The greater wire size has direct bearing on the efficiency of an electrical system. At least eight circuits and preferably 10 or 12, will be furnished, and so designed that a minimum of two of these may be three-wire circuits, equipped with circuit breakers or fuses of up to 50 ampere capacity.

The three-wire circuits, to which only one piece of equipment is usually connected, enable the householder to supply the proper voltage for equipment like the electric range, which requires 240 volts.

With an average of 14 electrical appliances predicted for the home 10 years from now, the 100 ampere capacity which builders may now be ready to build into their housing under their new standard, is a 'nick-o'-time' development. Householders are already using an average of 2330 kilowatt hours of electrical energy in each home. By 1963, on the basis of one million new homes a year, the average KWH consumption is estimated at 5000. If some startling new electrical development should come along, even that figure might be topped.

When the homeowner's service entrance panel (fuse box or circuit breaker box) is installed so that using its spare circuits later on may require remodeling, the builder following the NAHB voluntary standard will provide two "dead" three-wire #6 cables or two empty one-inch conduits.

The conduits can be either rigid or flexible. One or both go to an accessible location in the attic or below the first floor.

If slab construction is involved, one of these conduits goes to the attic and one to the equipment wall in the kitchen. In the case of beam and plank ceiling, both conduits go to equipment walls in the kitchen or elsewhere.

Thus the home buyer can "add on" later the heavy duty circuits he needs.

And if he has an attached garage, he can use power tools, laundry equipment or a home freezer in that location, where the builder, under the new standard, has run one "dead" three-wire #12 cable or empty one-inch conduit from the panel box to an accessible spot in the garage.

In any event, he will be in for better position to "live electrically" than his fellow home buyers who do not have the protection of the voluntary NAHB standard.

Arkansas Power wins Reddy Kilowatt contest

TOP AWARD WINNER in the 15th Reddy Kilowatt Annual Report Contest is the Arkansas Power & Light Co., Little Rock, Ark. The first place plaque and certificate "for its outstanding Annual Report which so splendidly illustrates and simplifies to Stockholders the

BRYANT MEETING—Southeastern sales personnel of the Bryant Electric Co., Bridgeport, Conn., are shown at their recent area sales meeting in Washington, D. C. Sitting, from left to right, are W. B. Rankin, J. H. Burton, W. K. Milligan, and C. E. Hulsey. Standing, from left to right, are R. P. Jett, J. P. Wayman, W. M. Gregory, J. A. Briggs, H. Hey, Bryant salesmanager, and F. C. Adams, area manager.

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Tiger Brand

Electrical Wire and Cable

Varnished Cambric

Tiger Brand Varnished Cambric Cable is the most economical way to transmit large blocks of power short distances.

Amerclad

To withstand physical abuse, moisture, sun and oil, use Tiger Brand Amerclad for all sorts of portable equipment.

Amerbestos

Tiger Brand Amerbestos is a true *quality* heat resistant material. The asbestos is *felted* for greater durability.

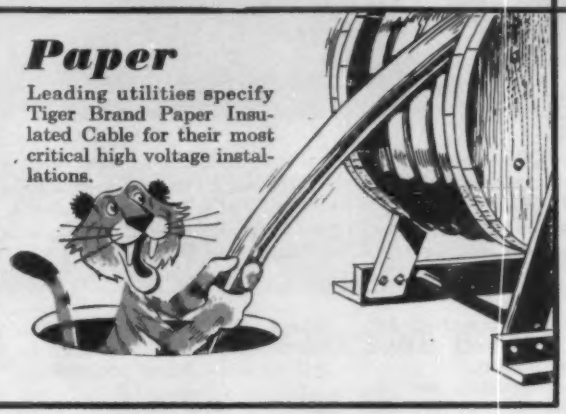
Submarine For underwater power distribution, there's a Tiger Brand Submarine Cable to withstand any operating condition.

Ampyrol

Tiger Brand Ampyrol features thin-walled thermoplastic insulation, brilliantly color coded, easy to strip.

Paper

Leading utilities specify Tiger Brand Paper Insulated Cable for their most critical high voltage installations.



American Steel & Wire *specializes* in wire and cable that must withstand abusive service. No matter what kind of operating condition you may have, there is probably a *standard* Tiger Brand Wire or Cable that will give you better service than you ever dreamed of.

Send the coupon and outline your problem. We'll see that you get service—*fast.*

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A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB

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UNITED STATES STEEL

Company's operations during the past year" was made at the recent Edison Electric Institute Convention at Atlantic City. C. Hamilton Moses, Arkansas Power & Light board chairman, accepted the award for his company.

Kansas Power & Light Co., Topeka, Kansas, received honorable mention for its annual report; and Kansas City Power & Light Co., Kansas City, Mo., and Central Power and Light Co., Corpus Christi, Texas, received special mention.

SANGAMO VISITORS—One of the highlights of Sangamo's recent three-day general sales conference on their new J2 watthour meter was a factory tour in Springfield, Ill. Shown observing the operation of a new testing device on the meter production line are, left to right: C. W. Ingraham, Dallas, Texas; H. E. Kirby, Shreveport, La.; and G. A. Hoffman, New Orleans, La.

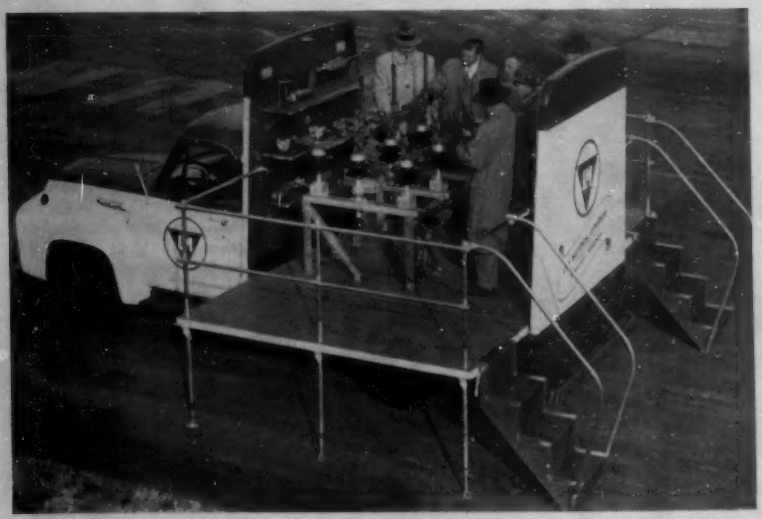
Westinghouse show uses wide screen technique

CALLED "CHAIN REACTION," a Westinghouse two-hour show currently being presented on a cross-country tour, is designed to be of interest to electrical contractors, industrial production and operating management, architects and consulting engineering and building owners and superintendents.

Generally, its theme is based on the benefits to all in modernizing out-dated electrical systems in industrial and office locations. The effect upon a community of one man's decision to convert to an up-to-date system are vividly protrayed in this full color production.

This sales show combines motion pictures, slides, the wide screen and two-directional sound all in one presentation. It features the use of a 21-foot-wide translucent screen, three slide projectors, two movie projectors and two loud speakers. All this is operated by one man seated at a small control panel behind the screen.

Out front, the audience sees a picture in full color almost as wide as the room or sometimes three different pictures side-by-side, depending on the script. Sound comes from different directions, a la Hollywood. Motion pictures blend into slides and vice versa where the change in technique offers the most advantage to the selling story being presented.



TOURING POWER SWITCH—Line Material field engineers are using two mobile display units, each of which contains a 600-amp, 23-kv, three-phase switch, frame mounted and arranged to demonstrate operation encountered under field conditions. Cutaways of critically designed components are included in the display. One of the units is currently touring the Southeast, the other is now touring the Southwest.

Freeman Electric named A-C motor service shop

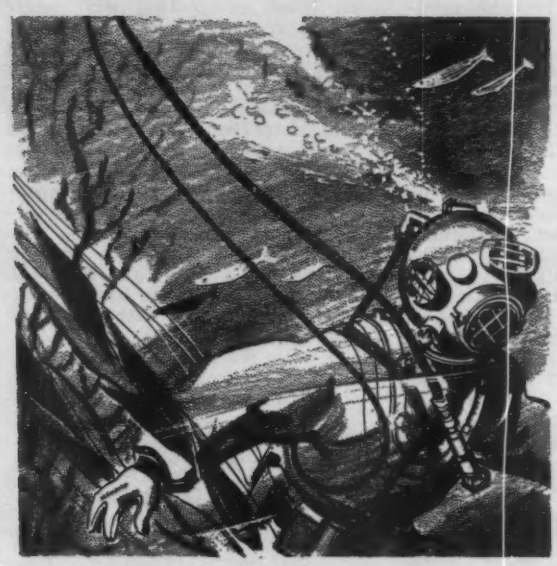
FREEMAN ELECTRIC CO., 1616 25th Ave., Tuscaloosa, Ala., has been named a certified service shop for Allis-Chalmers motors, controls and transformers in 10 Alabama counties. Area served includes Perry, Marengo, Sumter, Greene, Hale, Bibb, Pickens, Tuscaloosa, Lamar, and Fayette counties.

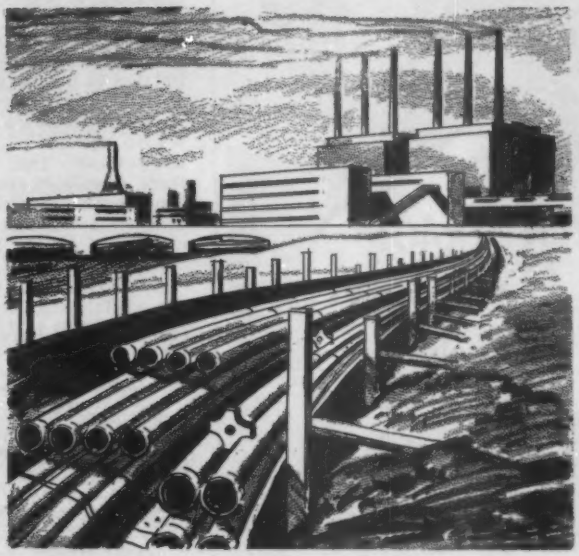
J. D. Freeman is owner of the firm, which has been a distributor for Allis-Chalmers motors, controls and transformers since July, 1953.

Correction

In the article published in April 1954 issue of ELECTRICAL SOUTH, entitled "Electrical System for Medical Research," reference was made to the fact that the electrical installation was made by the Joint Adventurers, a three-firm contracting group. In listing the three firms making up this organization, one name was inadvertently omitted. The three names are: Harry Alexander, Inc.; E. C. Ernst, Inc.; and Howard P. Foley Co., Inc.

LIFE LINES





Oxygen lines are the life lines of every diver!
Electric cables are the life lines of every community!
Orangeburg Fibre Conduit gives cables complete underground protection!

ELECTRICAL CABLES...the *life lines* through which power flows into every community's homes, offices and plants...must have the fullest and the longest protection possible. And that is what they get in the underground ducts with Orangeburg Fibre Conduit.

This is a fact so well understood throughout the electrical industry that Orangeburg Fibre Conduit is a first choice of Public Utilities, Municipalities, Industries and Electrical Contractors everywhere.

The reasons for Orangeburg's High Quality! Tough, strong, resilient, non-metallic...Orangeburg Fibre Conduit does not crack or break. Its impermeable walls and tight joints bar out corrosive ground waters. Its smooth bore and low coefficient of friction protect cable sheaths from abrasion while *going in* and *after they are in* the duct. Orangeburg material resists acids, alkalies, salt, grease, oil. The net result: a *longer-lived* raceway for *longer* cable life.

Check these cost-saving advantages...Light weight ... long lengths ... readily assembled joints ... angle couplings, bends and other Orangeburg standard fittings ... these are some of the reasons why Orangeburg Fibre Conduit is so quick, easy and economical to install. Send to Dept. ES74 for more facts.

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STANDARD with concrete encasement **NOCRETE** without concrete encasement

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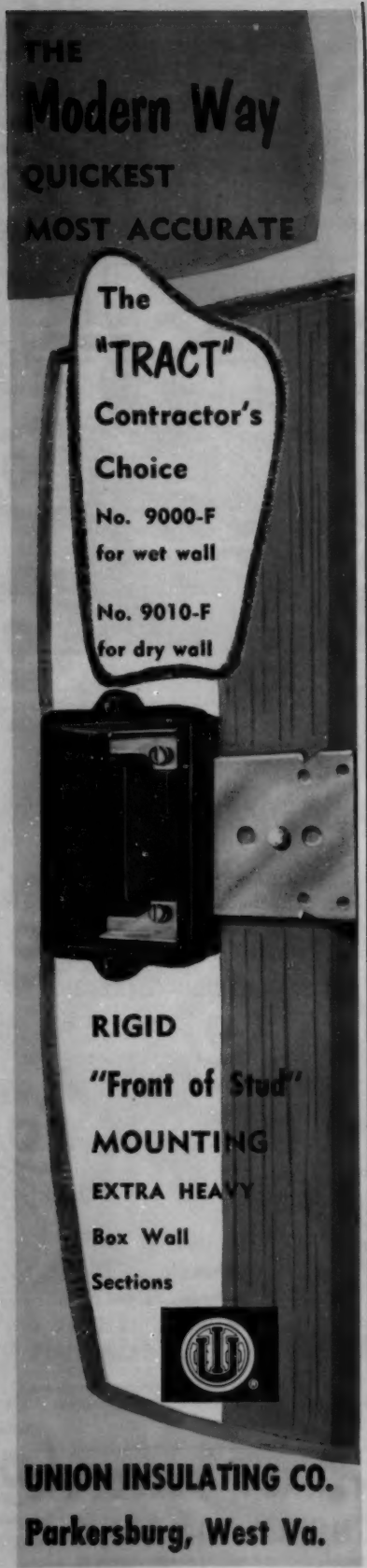


Oklahoma City IECA sponsors lighting school

THE OKLAHOMA CITY Chapter of the Independent Electrical Contractors Association recently sponsored a lighting school for their members and guests. This newly formed organization needed a project to promote interest and cooperation among their members. They decided a lighting school would serve this purpose as well as provide the contractors and their employees enough information about planned lighting to enable them to sell their customers more and better lighting installations.

The Oklahoma Gas and Electric Co., Oklahoma City, volunteered to furnish the instructors, meeting place, demonstration equipment, and text books. A $7.50 fee was the only charge for the course.

Paul R. Sheline, Oklahoma G&E lighting engineer, organized the seven-week course. The Westinghouse Lighting Handbook was used as a guide and text. Subjects covered during the course included: The Eye, Vision and Light; Light Sources (Incandescent, Fluorescent, Mercury Vapor); Demonstration and Discussion of: Requirements of Good Lighting and Types of Fixtures and Systems; Calculations of Lighting Design; Planned Store Lighting; Planned Industrial Lighting; How to Find Prospective Customers; Cost Analysis of Lighting Systems; and Maintenance of Lighting Systems.

Several instructors were used for the course. They were Mr. Sheline, Bob Gow, Fred Delano, Lloyd Boyles, Don Holt, and Miss Marguerite Borelli, all of the utility, and Elmer Prag, Day-Brite representative.

Thirty-nine people enrolled in the school with an average attendance of twenty-three for seven meetings. It was announced that all those completing the course would receive light meters, and twenty individuals were presented with meters at the end of the course.

Mr. Sheline reports that a great deal of interest was shown by all those attending the course, and that at least three things had been accomplished: the IECA Chapter had been strengthened by the fellowship; each individual was better prepared to sell more lighting fixtures and outlets; and the contractor and the utility had become better acquainted with one another's problems.

O. D. Wallis is the I.E.C.A. Oklahoma City Chapter President, and W. E. Maxson is secretary.

Arkansas P&L asks general rate increase

FOR THE FIRST TIME in 28 years, Arkansas Power & Light Co., Little Rock, is asking for a general increase in electric rates.

New rates, representing an overall 12 per cent increase which would produce about $3,900,000 more revenue for AP&L, would go into effect on bills July 1. The company filed an application for the increase with the Arkansas Public Service Commission in Little Rock recently.

AP&L serves 734 communities and 263,500 customers in 61 Arkansas counties.

Over 54 per cent—more than

Members of the Oklahoma City Chapter of the Independent Electrical Contractors Association and their guests are shown as they concluded a seven-week lighting school. Twenty individuals completed the course.

THERE IS
NO BETTER
TRANSMISSION CONDUCTOR
AND NO
SERVICE TO EQUAL
THAT OF . . .

Southern Electrical Corporation

CHATTANOOGA, TENNESSEE

Write, wire or phone us when you need:

ACSR Conductors

ACSR Accessories

Bare Copper Wires and Cables

Galvanized Steel Strand

Weatherproof Wire (Aluminum or Copper—Neoprene or Type URC—Neoprene Triplex)

Our own trucks make delivery to points in the southeastern area within 48 hours after we receive an order. When you place your order, we will tell you when to expect it—and you can depend on what we say.

We appreciate your business

$2,000,000—of the total increase would go for taxes. The increase would come from customers as follows:

136,600 residential customers would be raised a total of $1,262,000.

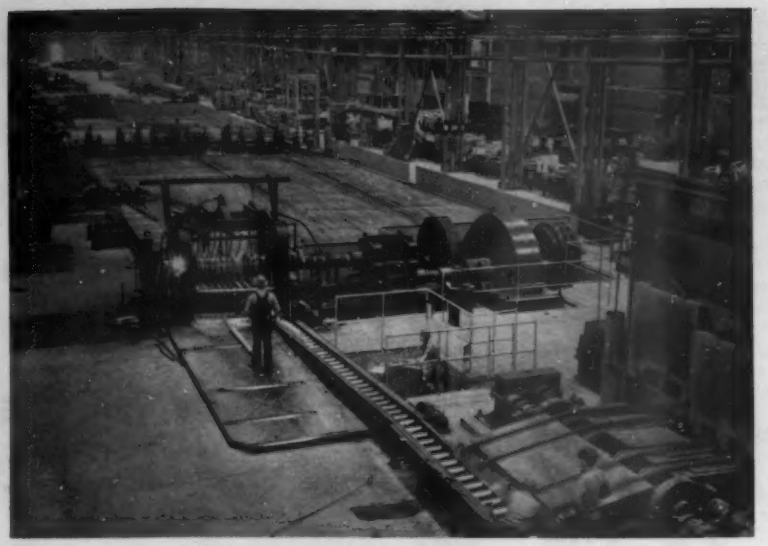
96,200 rural customers would be increased a total of $972,000.

26,900 commercial customers would pay $1,173,700 more; and 2,350 industrial and miscellaneous customers would pay an additional $492,300.

AP&L President R. E. Ritchie stated at a press conference, "We have tried everyting we could to avoid filing this application, but increasing costs leave us no choice. We have asked only for enough additional revenue to enable the company to meet higher costs, to continue to provide good electric service, and to earn the allowable return on our investment."

He added, "Despite substantial gains in sales, the increased cost of doing business has prevented the company from earning its allowable rate of return for the last six years."

For the average city and farm consumer, the increase will amount to less than three cents a day.



Over-all view of Reynolds' new merchant mill in Sheffield, Ala., making aluminum wire, rod, and bar products. In immediate foreground at right is the reheating furnace. Products follow a straight line flow from raw bars at one end to inspection and shipping at the other.

Reynolds completes Sheffield, Ala., plant

A NEW MERCHANT MILL which has capacity to produce 36 million pounds of aluminum merchant wire, rod and bar products annually has been completed at Sheffield, Ala., at a cost of approximately one and three-quarter million dollars, it is announced by J. Louis Reynolds, Reynolds Metals Company's vice-president in charge of manufacturing. The facility is now in production and includes 130,000 square feet of floor space. Products include aluminum electrical conductors and aluminum conduit.

A new mill building was erected consisting of one 80-foot and one 60-foot bay, both 880 feet long. The high bay type of construction is employed to facilitate adequate crane service for all operations. The equipment layout is such that the wire or rod products follow a straight line flow from rolling to inspection and shipping of the final product out the far end of the mill.

In the new merchant mill, rod products will be produced up to 2.0-inches in diameter, while wire can be furnished down to approximately 0.092-inch in diameter in either coiled or in straightened lengths. A complete line of rectangles, squares, hexagons, angles, and flattened wire can also be produced in much greater quantities than ever before.

NEW WAGNER BUILDING—This is the new branch office and warehouse building of Wagner Electric Corp., 1536 Boulevard Ave., N. E., Atlanta, Ga. Both the electrical branch office, formerly located in the Volunteer Building, and the automotive branch office, formerly at 14 Alexander St., N. W., are now housed in the new building. W. E. Prewitt is manager of the electrical branch office, and C. G. Jackson is manager of the automotive branch office of the St. Louis manufacturer.

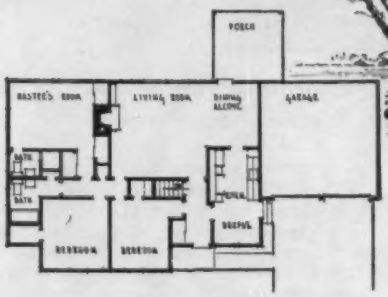
I-T-E acquires BullDog Electric

W. M. SCOTT, JR., president of the I-T-E Circuit Breaker Co., with main offices in Philadelphia, has announced that through an exchange of common stock, the BullDog Electric Products Co., Detroit, Mich., has become a subsidiary of I-T-E. BullDog will continue to operate under its own corporate name, with William H. Frank remaining as president of BullDog and retaining the same personnel and policies. William H. and Henry B. Frank of BullDog will shortly join the board of directors of I-T-E.

I-T-E manufactures high and low voltage electric power distribution apparatus and special metal products. BullDog manufactures a line of non-competitive and complementary electrical equipment. The present sales and marketing methods of I-T-E and BullDog will be continued.

Miller Nichols,
President J. C. Nichols Company

IN KANSAS CITY'S FAMED COUNTRY CLUB DISTRICT...



FASCO

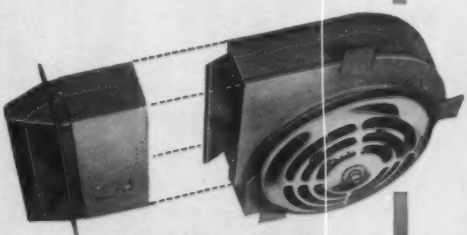
VENTILATING FANS ADD A "POTENT SALES APPEAL"!

"The J. C. Nichols Company is pleased to endorse the use of Fasco Ventilating Fans. They are used in many houses which the company builds throughout the Country Club District. It adds one more potent sales appeal for the salesman to use when presenting our company's homes to the discriminating buying public. In an area like the Country Club District we are extremely particular about the kind of products which go into our homes. We are pleased when we add the name 'Fasco' to our list of quality products."

Miller Nichols

Country Club District of Kansas City, Missouri, developed by the J. C. Nichols Company, is often called "America's Finest Residential Area". The development has grown to include more than 6000 acres. The homes range from the moderately priced two bedroom ranch home to the costly estates, many of which sell for more than $150,000.

FASCO VENTILATING FANS are in use everywhere throughout the area. Over sixty-five builders, in addition to the Nichols Company, are currently building in the Country Club District. Once again Fasco proves it is America's *most popular* ventilating fan!



MODEL 1021 **"CEIL-N-WALL" DELUXE**
FOR LARGE AND MEDIUM SIZED KITCHENS

THIS FASCO Kitchen Ventilating Fan is adaptable for a wide range of installations—inside wall above stove—thru cabinets—in ceiling. Housing 3 ¼" thick. Engineered for most difficult type of exhausting—by pressure thru ducts. New Fasco Turbo-Radial Impeller develops pressures unobtainable by ordinary fan blades. 10" Impeller, 530 C.F.M.

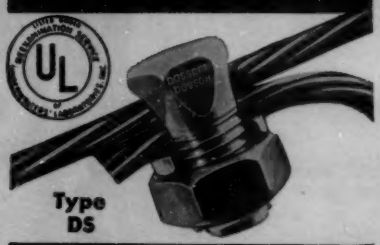
FASCO INDUSTRIES, INC.

37 AUGUSTA STREET • ROCHESTER 2, NEW YORK

SPECIFY FASCO FOR EVERY VENTILATING FAN INSTALLATION

MANUFACTURERS OF THE ONE COMPLETE LINE OF VENTILATING FANS

JOINED for LIFE with DOSSON SERVICE CONNECTORS



Type DS

The choice of connectors is wide, but there's a big difference when you choose a Dosson. Years of testing under the worst weather and corrosion conditions give undisputed proof of Dosson's permanent grip. Makes quick, simple, efficient connections for solid and stranded conductors in sizes No. 14 to 1000 MCM. High contact pressure between conductors assures maximum security . . . eliminates maintenance. Check these important Dosson features:

1) High translation of torque by low coefficient of friction
2) High contact pressure
3) Free from vibrational loosening
4) Withstands high tightening torque
5) Maximum contact area "DURONZE" alloy
6) Made of high strength
7) Better conductivity
8) High corrosion resistance
9) Economical—usable over and over again
10) Dossert precision-manufactured

IN STOCK FOR IMMEDIATE DELIVERY!

50 YEARS OF TECHNICAL KNOW-HOW

DOSSERT REPRESENTATIVES IN PRINCIPAL CITIES

DOSSERT MFG. CORP.
249 HURON STREET, BROOKLYN 22, N. Y.
SINCE 1904

Expansion announced for G-E's Rome plant

A $2,000,000 EXPANSION PROGRAM for the General Electric Company's new $25,000,000 power transformer plant at Rome, Ga., is now underway.

Plant Manager David B. Lawton said the expansion will consist of additions to present manufacturing facilities and a new cafeteria for employees. Cost of the program includes new equipment.

The additions will be for the manufacture of paper wound insulating tubes and a new continuous-operation annealing furnace.

The cafeteria will have a dining area of 3,000 square feet and a kitchen storage area of 1,500 square feet. The kitchen will include a deep freeze room and a refrigerated garbage disposal room.

Lighting maintenance contractors organize

THE FIRST ANNUAL conference of the National Association of Lighting Maintenance Contractors was held in Cincinnati, Ohio, recently.

Highlight of the two-day organizational meeting was the election of the group's first officers. Walter C. Fink, Jr., Senior Fluorescent, Inc., Atlanta, Ga., was elected president; Luther H. Nunnally, Jr., Fluorescent Maintenance Co., Birmingham, Ala., was elected secretary-treasurer; and Edward I. Creed, C & S Lighting Maintenance Co., Cleveland, Ohio; George Kort, Maury's Fluorescent & Appliance Service, Louisville, Ky.; Francis Clark, Lighting Services, Waterbury, Conn., and Herbert Mendelsohn, Sun Ray Lighting Corp., Kansas City, Mo., were elected regional vice-presidents.

Other Southern charter members of the organization include James W. Huckle, Jr., Al Lusby, Jack Clark and A. L. Pickens of A-J Lighting Maintenance Co., Lexington, Ky.; W. Ernest Butcher, Butcher Electric Service, Dallas, Texas; V. Clyde Leftwich, Certified Lighting Service, Chattanooga, Tenn.; Pat Bordelon, Salem Fluorescent Maintenance Service, New Orleans, La.; and John B. Walton, Walton Electric Co., Griffin, Ga.

Georgia inventor wins Westinghouse award

FOR INVENTING a way to "detour" excessive current due to lightning or other causes of short circuits on electric power lines and thus protect vital electric capacitors from damage, Ralph E. Marbury, veteran engineer of the Westinghouse Electric Corp., has received a $5,000 "outstanding invention" award from his company.

John K. Hodnette, Westinghouse vice-president in charge of apparatus products, and A. C. Monteith, vice-president in charge of engineering, presented the check at a surprise ceremony before company officials and employees at the East Pittsburgh plant.

Mr. Marbury now is manager of the capacitor section of the Switch-

Newly elected officers of the National Association of Lighting Maintenance Contractors are shown at the group's recent organizational conference at Cincinnati. From left to right, they are, Francis Clark, Edward I. Creed, Luther H. Nunnally, Jr., Walter C. Fink, Jr., and George Kort.

For many years Contractors from Coast to Coast have used Briegel All Steel Indenter Fittings. U. L. approved as concretetight and for general use, B-M Indenter Fittings are faster, easier to use and neater in appearance.

Installation is simple and less expensive. Two quick squeezes sets them forever. Try B-M Indenter Fittings and get more profits from each job!

BRIEGEL METHOD TOOL CO.
GALVA, • ILLINOIS

Warehouse Stocks in Principal Cities for Immediate Delivery!

Protect electrical equipment and keep maintenance cost down!

Pyle accurately-cut tapered threads and tapered rubber bushings prevent strain on terminal connections and prevent moisture or dirt from entering wiring compartments or mechanism enclosures.

Available in a variety of styles and sizes including types with hexagon nipple for anchoring in sheet metal panels, etc.

Sold nationally through electrical distributors. Write today for Bulletin.

THE PYLE-NATIONAL COMPANY
1354 N. Kostner Ave. Chicago 51, Ill.

gear Division of Westinghouse. At the time of the invention in January, 1948, he was section manager of design engineering.

Since joining Westinghouse in August, 1917, the 57-year-old engineer has submitted 264 invention disclosures and holds 70 issued patents. In addition, 11 of these disclosures now are pending in the patent office.

Mr. Marbury, a native of Commerce, Ga., attended schools in Newnan, Ga., and also the Georgia Institute of Technology. For the year following his start at Westinghouse he took courses at the Carnegie Institute of Technology.

E & M Supply, El Paso, holds formal opening

FORMAL OPENING of their new offices, display rooms, and warehouse at 2000 Texas St., El Paso, Texas, was held recently by the Electrical & Mechanical Supply Co., Inc. A large number of the firm's customers, their families and associates were on hand to get a first hand look at E & M's beautiful new structure.

Curtis Lighting names Wright new president

JOHN A. WRIGHT was elected president of Curtis Lighting, Inc., Chicago, by the board of directors at a recent meeting. Mr. Wright has been associated with Curtis for several years as the corporation's Attorney and has been actively engaged in corporate and general administrative legal work, corporate finance, personnel and administrative practice. He attended Dartmouth College and is a graduate of Harvard Law School.

Mr. Wright succeeds Darwin Curtis, former president, who remains a member of the board of directors. Dr. Ward Harrison continues as chairman of the board.

Curtis Lighting, Inc. is engaged in the manufacture of fluorescent and incandescent lighting equipment for commercial and industrial use.

Gover Company named Fasco representative

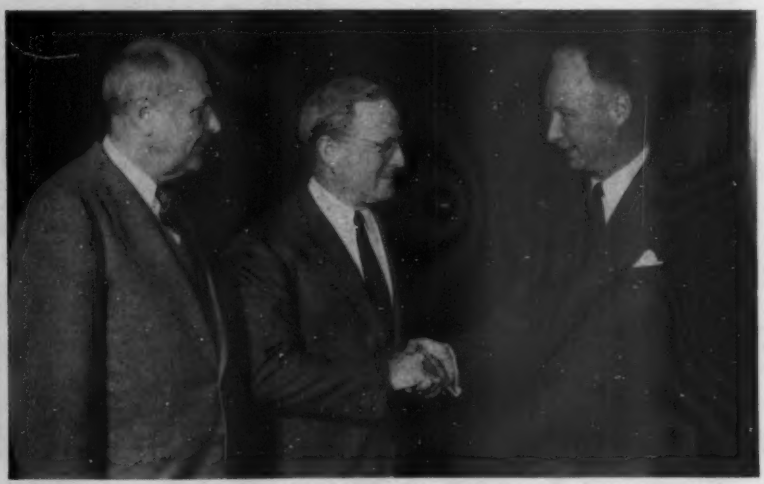
APPOINTMENT of the Gover Co., Charlotte, N. C., as sales representative for Fasco fans and ventilating fans throughout the states of Virginia, North Carolina and South Carolina, has been announced by the Consumer Goods Division, Fasco Industries, Inc., Rochester, N. Y.

This territory was previously covered by the S. L. Bagby Co.

Birmingham branch opened by Landers

L. MORRIS LANDERS CO., Atlanta, Ga., electrical manufacturers agents, have announced the opening of an additional branch office at 604 13th, S. W., Birmingham, Ala. The office will be managed by C. E. Parker, who recently joined the company.

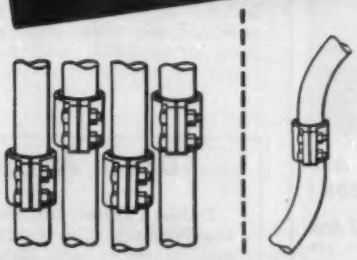
Mr. Parker, who has many years of experience in the electrical field in sales as well as contracting, was graduated from Georgia Military Academy and saw service with the Marine Corps during World War II.



Darwin Curtis (right) former president of Curtis Lighting, Inc., Chicago, extends congratulations to John A. Wright, the firm's new president. Dr. Ward Harrison (left) continues as the manufacturer's board chairman.

*"TOUGH" conduit coupling jobs

(Type "SP")
Interior thread meshes with conduit threading for rigid, tight-fitting connection.
are easy with O. Z.
split couplings
Bolt heads are held in place by shoulder on coupling, eliminating need for second tool.
One piece malleable iron construction facilitates handling during installation.
To install, simply slip over one conduit end, butt ends of both conduits, slide fitting back into position and tighten nuts.



Butt the conduit ends within the O. Z. Split Coupling —tighten two nuts with an ordinary open-end wrench and presto . . . you have a permanent, close-fitting, rigid connection.

Drastically reduced installation costs, plus initial savings of as much as 50% in larger sizes, over similar competitive fittings, are just two of the many reasons why you should specify O. Z. Split Couplings for your difficult conduit coupling jobs.

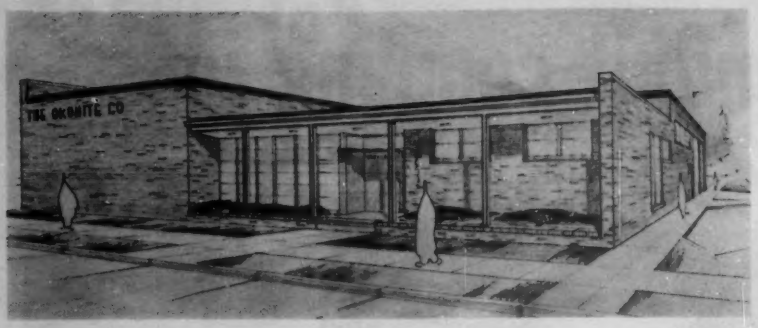
Call your local O. Z. distributor . . . he is ready to make immediate delivery from stock on sizes from ½" to 5".

* **"Tough"**—(Where ordinary couplings can't be installed). Are clearances close—near floor, wall, ceiling or other obstructions? Can conduits be turned due to bends? Is space or accessibility a factor? Just install an O. Z. Type "SP" Split Coupling.

O. Z. ELECTRICAL MANUFACTURING CO., INC.

262 BOND ST. • BROOKLYN 17, N.Y.

CAST IRON BOXES • SOLDERLESS CONNECTORS
CABLE TERMINATORS • GROUNDING DEVICES
POWER CONNECTORS • CONDUIT FITTINGS



This is an architect's drawing of Okonite Company's new modern warehouse and sales office currently under construction at 31st Street South and Avenue G in Birmingham, Ala. Dewey A. White will be in charge.

Okonite building Birmingham branch

OKONITE CO., Passaic, N. J., has begun constructing a modern warehouse and sales office at 31st St., S., and Avenue G, in Birmingham, Ala., to better serve its distributors and customers in 10 Southern states.

The Birmingham facility, to include an air conditioned district office, will be the third for the company. Other Okonite warehouses are located in Chicago and Los Angeles.

Dewey A. White, with the company for many years, will head the Birmingham office. J. H. West & Sons are the general contractors, and Pembleton & Mims the architects for the new building.

"We have long enjoyed a large volume of business in the Southeast and the Birmingham warehouse will enable us to better serve our distributors and customers in the South," Charles M. Kirkland, Okonite vice-president has stated.

"With the tremendous utility development program projected and under way for this area, the Birmingham plant will enable our company to take fuller advantage of this growing market."

Okonite Co., founded in 1878, produces insulated cables and wire for transmitting electricity from 300 to 233,000 volts. It is also a large supplier of insulated submarine cables.

'Dosson' connector line marks Dossert anniversary

A NEW LINE of service connectors, commemorating the company's 50th anniversary, has been announced by Dossert Manufacturing Corp., 249-255 Huron St., Brooklyn 22, N. Y. This new line, which will be marketed under the trade name of "Dosson," was announced at the firm's recent annual stockholder's meeting by Charles A. Martin, treasurer of the solderless connector pioneer manufacturer.

Al Levin & Associates get Silv-A-King district

AL LEVIN & ASSOCIATES, INC., New Orleans, La., has been appointed district sales manager for Electro Silv-A-King Corp., Chicago, Ill., and Bridgeport, Conn., according to a recent announcement. They will contact distributors, contractors, architects and others in the lighting field throughout Louisiana and Mississippi, including Mobile, Ala.

The firm, which is headed by Mr. Levin who has been associated with the electrical industry in this area since 1935, will handle the complete Electro Silv-A-King line

KEYSTONE OUTLET BOXES AND SWITCH BOXES ARE DESIGNED FOR "DOUBLE QUICK" INSTALLATION!

When it comes to downright ease of installation, you'll find the entire line of Keystone Outlet and Switch Boxes are loaded with time-saving, cost-reducing features. Knock-outs and "pri-outs" that can be removed "double quick." BX or Romex clamps already assembled with nested fit for quick, easy pulling of wires. In 4" octagon boxes, extruded holes provide extra thickness to eliminate costly stripping of threads. And switch boxes, 4" square boxes, and handy boxes are available with mounting brackets to facilitate installation. Yes, these and other quality features make it well worthwhile to specify "Keystone" for all your box requirements.

FREE CATALOG describes and illustrates the entire line of Keystone Wireways and Fittings, Cutout Boxes, Pull Boxes, Outlet Boxes, Switch Boxes, Covers, and Bar Hangers. Contains complete specifications and prices. Send for your free copy today!

KEYSTONE MANUFACTURING COMPANY
23328 SHERWOOD AVENUE
CENTER LINE (Detroit), MICHIGAN

Sold Through Leading Electrical Distributors Coast-to-Coast

Dates Ahead

Public Utilities Association of the Virginias. Thirty-Sixth Annual Meeting, Sept. 16-18, 1954. The Greenbrier, White Sulphur Springs, W. Va.

Florida Chapter, IAEI. Joint Meeting with Southern Section, Tampa Terrace Hotel, Tampa, Fla., Oct. 25-27, 1954.

Southern Section, IAEI. Tampa Terrace Hotel, Tampa, Fla., Oct. 25-27, 1954. Conference chairman, R. A. Miller, Tampa.

Oklahoma Utilities Association. Annual Convention, Mayo Hotel, Tulsa, Okla., March 24-25, 1955.

"6,000 employees . . ."

A. W. STEUDEL
President
Sherwin-Williams Company

"Naturally, we of Sherwin-Williams give complete endorsement to the Payroll Savings Plan. But we feel that mere approval of a national thrift movement that contributes so much to the personal security of our employees and the economic stability of our country is not enough. In our continuing effort to build employee participation in our Plan, we utilize the personal contacts and enthusiasm of our enrolled Payroll Savers. A recent person-to-person canvass by our employees put a Payroll Savings application blank in the hands of every man and woman in our plants and offices. The result, nearly 6,000 serious savers were added to our Payroll Savings Plan."

The personal interest of executives like Mr. Steudel, and the systematic bond purchases of more than 8,000,000 enrolled Payroll Savers are reflected in the following figures:

- In March, 1954, purchases of U.S. Savings Bonds, Series E and H, by *individuals* reached $474 million, highest March figure in 9 years—a gain of 20% over March, 1953.
- Purchases of E and H Bonds, by *individuals* during the first quarter of 1954, totaled $1,380 million—the highest for any quarter since 1945.
- The *cash value* of Series E and H Bonds held by *individuals* at the end of March, 1954, was $37 billion, 175 million—the highest in the thirteen year history of the Savings Bond program.
- Payroll Savers are serious savers: over 75% of the amount of Series E Bonds that matured since May, 1951—almost $9 billion—is still being held by individuals under the Treasury's 10 year optional automatic extension plan.
- For the third straight month of 1954, sales of E and H Bonds exceeded maturities and redemptions. The sales excess amounted to $242 million on March 31—the highest first quarter net since 1950.

If employee participation in your Payroll Savings Plan is less than 50%—or if your company does not have a Payroll Savings Plan, get in touch with Savings Bonds Division, U.S. Treasury Department, Washington, D.C. Your State Director, U.S. Treasury Department, will be glad to help you install a Plan and build employee participation.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

ELECTRICAL SOUTH

which includes fluorescent and incandescent lighting fixtures for commercial and industrial use, both indoors and outdoors.

The Lighting Division of Al Levin & Associates is managed by Tom Melady, who was formerly associated with the Lighting Division of the G-E Supply Corp.

Fasco leases plant at Fayetteville, N. C.

ANNOUNCEMENT of a long term lease of the new Wellons Warehouse at Fayetteville, N. C., has been made by Fasco Industries, Inc., Rochester, N. Y. This is a one story building of 140,000 square feet with 20 acres of adjoining land.

For this summer, this building will be used as a Southern distributing center for the Fasco line of oscillating and window fans and kitchen ventilators. Installations, which will take several months, are being made to make this new plant a Southern manufacturing center for Fasco fan and ventilating products.

Fasco, which has some 2,000 employees at its Rochester plant, produces fractional hp motors, and electrical switch gear.

News about people

Four appointments involving General Department personnel have been announced by the **Graybar Electric Co.**, New York, N. Y. General Outside Construction Sales Manager **L. W. Taylor** has been appointed general power apparatus and outside construction sales manager following the appointment of General Power Apparatus Sales Manager **B. P. Van Inwegen** as manager at Baltimore. **R. C. Dunn**, sales manager of the Rural Lines Dept., Chicago, has been appointed manager, power apparatus sales, in the General Dept., and **A. J. Haeger** has succeeded Mr. Dunn as sales manager of the Rural Lines Dept.

Mr. Taylor has been with the employee-owned company since joining as a salesman at Columbus, Ohio, in 1927. In 1937 he transferred to Chicago as assistant manager of the Outside Construction Dept. Two years later he became sales manager of the Rural Lines Dept., transferring to Washington, D. C., as company representative in January, 1942. In November, 1942, he became outside construction sales manager in the General Dept., and in October, 1952, he was appointed general outside construction sales manager.

Mr. Van Inwegen joined Graybar as a salesman at Newark in 1934. In 1948 he became assistant manager, lighting sales, in the General Dept., and a year later manager, supply specialty sales. In June, 1950, he was appointed manager, lamp sales, and in January, 1953, became general power apparatus sales manager. He has a degree in Electrical Engineering from Rensselaer Polytechnic Institute.

Mr. Dunn joined the company at Nashville, Tenn., in 1940 as a salesman, after 10 years as industrial sales engineer for the Tennessee Electric Power Co. In 1946 he became manager, outside construction sales, at Cincinnati, and in 1950 he was appointed manager of the Rural Lines Dept., at Chicago. He is a graduate in Electrical Engineering from the Georgia Institute of Technology.

Mr. Haeger has been with the company since joining in 1937 as a student. He was transferred to the Rural Lines Department the next year and in 1940 he became quotation clerk. During the war he was assistant physicist at the Picatinny Arsenal. He is an Electrical Engineering graduate of Armor Institute, now called the Illinois Institute of Technology.

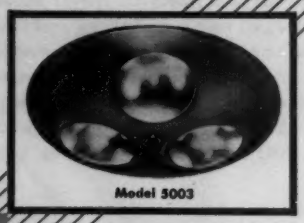
The appointment of **Harold D. Talbot, Jr.**, as advertising manager for all products, except photographic lighting equipment, of the **Lighting Division of Sylvania Electric Products Inc.**, was announced recently.

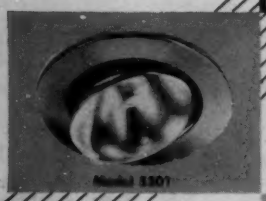
H. D. Talbot, Jr.

Mr. Talbot will be located in Salem, Mass., headquarters of the Lighting Division.

Charles A. Burton, general sales manager of the Lighting Division, said Mr. Talbot will be responsible for the advertising and sales promotion programs, involving incandescent and fluorescent lamps, Panelscent

Instant Heat
at the flick
of a switch


Model 3003


Model 3301

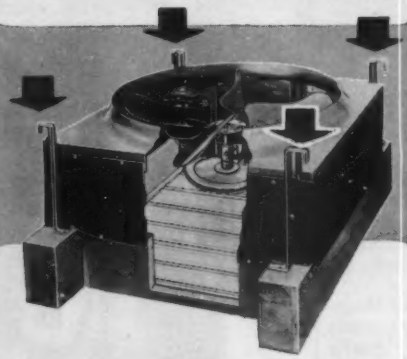
with
pryne
INFRA-RED CEILING HEATERS
FOR BATHROOMS

Check these points
2 MODELS—750 and 250 watts . . . Consumes less current.
ECONOMICAL INSTALLATION—no separate circuit . . . Fits between ceiling joists . . . Is pre-wired.
EASIEST MAINTENANCE—5000 hour lamp life . . . No service calls.
U. L. APPROVED

Compare these features
INSTANT HEAT — no waiting for air to heat and circulate
SAFEST—out of reach in the ceiling
EASIEST TO CLEAN — just dust it
CONVENIENCE — infra-red heat lamps available at appliance, electrical and hardware stores

pryne
— rhymes with FINE...and means it!
BOX S-74, POMONA, CALIFORNIA
Eastern Factory: Keyser, West Virginia
Canadian Factory: Toronto, Ontario
Warehouses: Los Angeles; San Francisco; Chicago; Newark, New Jersey
Distributed by electrical wholesalers everywhere in the U. S. and Canada

EXCLUSIVE FOUR-POINT SPRING MOUNTING!



No customer complaints about noise when you install a Chelsea! 4-point spring mounting cuts vibration. Insures permanently quiet operation.

Adapts to Either Vertical or Horizontal Installation

Only 1 type to stock when you sell Chelsea HV attic fans! Accessory kits* allow installation of same fan in horizontal or vertical position.

*Includes canvas boot and spring set.

Complete Range of Sizes

Chelsea offers 21 models in fan diameters from 24" to 60". Complete package units for easy installation.

Full 5 Year Guarantee

An important sales feature! Helps to protect both contractor and customer.

CHELSEA ATTIC FANS

CHELSEA FAN & BLOWER CO., INC.

PLAINFIELD • NEW JERSEY

ONLY ELECTROMODE ALL ELECTRIC HEATERS have all 3

Triple Assurance With . . .

A Combination That Can't Be Beat for HOME · OFFICE · FACTORY

MORE PROFIT FOR YOU

- √ Quick, easy to install
- √ Minimum maintenance
- √ 100% efficient
- √ Automatic control
- √ Clean, fan-circulated heat
- √ User satisfaction

MODEL WJA

Everybody wants a toasty-warm, good-looking bathroom. The Electromode Automatic Wall-Type Bathroom Heater is the ideal solution. Choice of gleaming chrome or white enamel finish. 1320 watts.

MODEL WA

Heat big rooms with this modern design Electromode wall model with built-in thermostat for individual room temperature control. Down-flo principle distributes heat at floor level. Silver grey hammertone finish blends with furnishings. Capacities: 1500 to 4000 watts.

MODEL 14-10

Suspension-type Unit Heater

Electromode Unit Heaters in Suspension and Combination Portable and Suspension types solve hard-to-heat areas in the plant and isolated locations.

100% SAFE

Hot resistor wires are insulated and embedded within a finned aluminum casting, assuring positive protection from fire, shock or burn. This finned type element acts as a superior heat diffuser, resulting in greater heating economy.

5 YEAR GUARANTEE

The patented, cast-aluminum heating element is guaranteed for five years against all defects of material or workmanship.

The Famous GE UNIT MOTOR

Totally enclosed construction protects motor from entry of dust. Large supply of oil sufficient for years of motor operation is factory-sealed-in. Forced lubrication system assures long life and quiet operation.

SAFETY SWITCH

Built into every Electromode Heater is a small thermal safety switch, located on or near the heating element. If for any reason the air flow should stop, causing overheating of the element, this safety switch automatically shuts off the current.

Approved by Underwriters' Laboratories

ELECTROMODE CORPORATION

45 CROUCH ST., DEPT. ES-74 ROCHESTER 3, N. Y.

Please send free literature on:

Electromode Heaters ☐ Domestic ☐ Industrial

NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

lighting equipment, fluorescent fixtures, wiring devices, transformers, coils, and starters.

For the past five years before joining the Sylvania organization, Mr. Talbot was sales promotion manager of the Floor Covering Division of the B. F. Goodrich Co., Watertown, Mass.

Mr. Talbot was graduated from Bowdoin College, and also studied advertising and sales promotion at Boston College. During World War II, he served as a captain in the Army Air Corps.

Robert H. Fite was named president and general manager of **Florida Power & Light Co.**, at the recent quarterly meeting of the board of directors in Miami. He succeeds **McGregor Smith** who was elected chairman of the board.

The new president has been an executive of FP&L since July 1945. He first joined the utility as an engineering estimator in 1926, three years after receiving his electrical engineering degree from Vanderbilt University.

Mr. Fite rose rapidly, assuming the responsibilities of a department head the following year, and in 1934 became general sales manager.

In 1936, he left FP&L to join the consulting staff of Ebasco Services, Inc., New York, N. Y., the service organization of Electric Bond and Share Co. He became head of their sales department soon thereafter and gained broad experience with many utility companies.

During World War II, much of his time was required in Washington, helping co-ordinate the operations and expansion of these companies with the war production plans of various branches of the federal government.

He returned to FP&L in 1945 as commercial vice-president and director, and was named general manager in 1950.

Funeral services were held in New Orleans on June 5 for a pioneer member of the electric industry. **Leroy L. Newman**, electrical research consultant for **New Orleans Public Service Inc.**, died on June 3. He had been with the New Orleans utility since 1923, serving for many years as superintendent of the Electric Distribution Division. During the years of his tenure, the company's distribution system underwent a complete rebuilding and modernization.

Mr. Newman was a native of Magazine, Ark. He attended the University of Arkansas at Fayetteville, graduating from there in 1901 with a bachelor's degree in electrical engineering.

He was widely known in the electric industry, and was a member of a number of technical and trade organizations, including the Edison Electric Institute, the American Institute of Electrical Engineers, the Electrical Association of New Orleans, and the Louisiana Engineering Society.

Survivors include his widow and two sons, all of New Orleans.

James J. Ling, president of **Ling Electric Co.**, electrical contractors of Dallas, Texas, has been appointed a member of the board of directors

James J. Ling

of Mid-Texas Trust & Insurance Securities Corp., Dallas, according to an announcement by the insurance firm.

Penn-Union Electric Corp., Erie, Pa., announces the appointment of **Dan E. Dunne** as president. Mr. Dunne previously has been vice-president and director of sales of

Dan E. Dunne

Lighting Products, Inc., Highland Park, Ill.

Mr. Dunne has always taken an exceptionally active part in industry affairs, such as committee work with the Illuminating Engineering Society, the vice-chairmanship of NEMA's Section on Industrial and Commercial Lighting, and service on NEMA-

ASSURE YOURSELF of SATISFACTION

DEMAND THE FINEST

AMERICAN *Bonded* ARMORED CABLE

Demand the Finest — Ask for and get factory-tested, improved armored cable —American Bonded Armored Cable is easier to handle, easier to install — Ready to use for faster, better, longer-lasting installations. — Look for the label on every coil.

AMERICAN METAL MOULDING CO.

146 Coit St. Irvington 11, New Jersey

Atlanta Warehouse
C. C. MYRICK
516 Elm N. W.
Atlanta, Georgia

Dallas Warehouse
PEABODY BROTHERS
3015 Taylor Street
Dallas, Texas

NAED Joint Committees.

Charles L. Stoeltzlen, founder of Penn-Union and now retiring from the presidency, will remain with the company in the capacity of consultant and advisor.

James H. McGuire, sales research engineer, **Georgia Power Co.,** Atlanta, was recently appointed assistant to **Harllee Branch, Jr.,** company president. Mr. McGuire succeeds **W. B. Farnsworth,** who passed on recently.

A native Georgian, Mr. McGuire was born in Winder. He attended Atlanta public schools and was graduated from the University of Georgia, Atlanta Division, in 1938 with a degree in commerce.

Mr. McGuire served five years with the U. S. Army during World War II and was discharged with the rank of lieutenant colonel.

Anderson Brass Works, Inc., Birmingham, Ala., has announced the appointment of **R. D. Cleaves** as general sales manager. Mr. Cleaves has assumed general sales responsibilities for Anderson in utility, transmission

R. D. Cleaves

and distribution and distributor fields.

An electrical engineering graduate of Pennsylvania State University, Mr. Cleaves has a number of years' experience in the electrical field, and has held executive sales positions with Allis-Chalmers and Line Material Co.

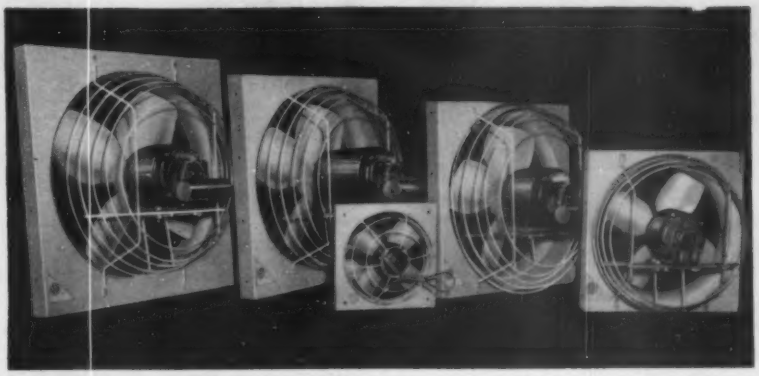
Announcement of the promotion of **Harold Elliott** to the position of sales manager has been announced by the **High Voltage Division, Porcelain Products, Inc.,** Parkersburg, W. Va.

Mr. Elliott joined the High Voltage Division in 1950, as field engineer. He has traveled extensively for the firm on a national basis, and is well known in the industry.

J. I. Rodale, president of the **Rodale Manufacturing Co., Inc.,** Emmaus, Pa., has announced the appointment of **A. F. Timar** as national sales manager. Mr. Timar first joined

"BUFFALO" PROPELLER FANS

Give Satisfaction On More Jobs

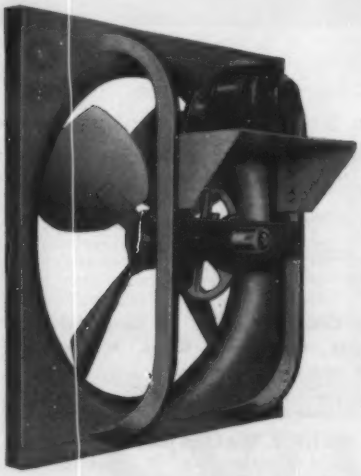


N-V BREEZOS . . . Quiet, Efficient, Sturdy!

Contractors, dealers, wholesalers are enjoying bumper sales, and pleasing many more customers with these versatile, propeller fans! Low in first cost, quiet, and very durable, NV-Breezos are easily installed in walls for free air delivery—or can be used efficiently against system pressures up to ½". 8", 12", 16", 18", 20" and 24" sizes. Write for Bulletin 3865.

BREEZ-AIR . . . The Attic Fan In Top Demand!

Now's the time to get set for the thousands of home owners in your area who are top prospects for cool comfort on those hot nights to come! Better write today for our price and installation sheet FM-20 on the completely NEW Breez-Air. In 24, 30, 36, 42, 48 and 54" sizes to suit every installation, they are the finest and most efficient fans in the long Breez-Air history!



BELT-AIR . . . The Big-Job Fan At Propeller Fan Prices

Not only is the new Belt-Air improved in quietness and performance, its size range is increased to include 24" to 120" fans—for jobs up to 250,000 cfm! And, like the NV-BREEZO line, it is available in a variety of protective coatings for special fume exhausting applications. Write for all the details on these husky, quiet, EASILY installed fans which can greatly increase your range of satisfied customers — and your sales. Don't delay. Write today!

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BELTED VENT SETS
"L" BREEZO FANS
BELT-AIR FANS
"NV" BREEZO FANS

this manufacturer of electrical wiring devices in 1930. Prior to his latest promotion he served as credit and accounts manager of the firm.

John F. Baker, has been appointed district engineer for the **Westinghouse Lamp Division's** North and South Carolina District.

Mr. Baker, who has been assistant regional engineer at the company's regional office in Atlanta since March 1953, will make his headquarters at the district office, Charlotte, N. C.

Harold B. Sudekum has been appointed district manager for **Electro Silv-A-King Corp.,** in Dallas, Texas.

Prior to this appointment, Mr. Sudekum was a lighting specialist for General Electric Supply Co., Dallas. He was associated with the Company for nine years.

Simplex Wire & Cable Co., Cambridge, Mass., has announced the promotion of **J. E. Auchmoody** from assistant to the president to the position of comptroller. Mr. Auchmoody has spent most of his business life in accounting and financial work. He is certified as a public accountant in both New York and Massachusetts.

Technical books

for the electrical man

Heating Ventilating Air Conditioning Guide 1954

32nd Edition. Published by the American Society of Heating and Ventilating Engineers, 62 Worth St., New York 13, N. Y., 1616 pages, $10.

Among the special features of this 32nd edition is a new chapter on Residential Summer Air Conditioning. Included are new data on methods of obtaining local relief in hot humid environments, new information on recent developments in air and gas cleaning, new tables on steam requirements of process equipment, and more detailed data on characteristics of pipe and tube.

Recent Society research has been used as a basis for extending the data on the effect of shading of glass and for improving the rewritten chapter on Air Distribution. The Technical Data Section has been enlarged to 1128 pages, representing an increase of 32 pages over the previous edition. The Manufacturers Catalog Data Section, of 486 pages, illustrates the products of 319 well-known manufacturers. An Edge Index is a new feature enabling users of *The Guide* to open the book immediately at any desired chapter of text or any section of catalog data.

Recent research conducted by the Society, or sponsored at leading Universities, has influenced changes, revisions and additions to a large proportion of the chapters. Chapters brought up to date by major changes include, Heating Load, Fuels and Combustion, Chimneys and Draft Calculations, Panel Heating, Pipe, Fittings, Weldings, District Heating, Air Cleaning, Automatic Controls, Electric Heating, and Owning and Operating Costs.

The large 24 x 32 in. ASHVE Psychrometric Chart, printed in two colors, is included.

Electronics textbook

By Dr. Thomas B. Brown. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 545 pages, $7.50.

"Electronics: A Textbook for Students in Science and Engineering," written by Thomas B. Brown, professor of physics at the George Washington University, is a new book devoted to fundamental concepts and principals, with emphasis on the physical interpretations of electron tubes and circuits.

Dr. Brown keeps the discussion of circuits as simple as possible, in order to avoid the confusion of basic electronic theory with circuit theory. In keeping with his slant on physics, however, he develops more fully than the usual junior-senior level book is apt to do those theories that concern physical processes inside electron tubes.

Descriptions of laboratory and demonstration experiments are featured as an integral part of this text, and include such original graphical analyses as that given for Eccles-Jordan (flip-flop) circuits. The author also gives special consideration to the non-linear functions performed by electronic circuits and treats the modulation processes, which include detection and frequency conversion, in a systematic manner in order to bring out the common relationships. An

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For long smooth service "Latrobe" Floor Boxes and Wiring Specialties are tops. Years of performance have proved that. And, "Latrobe" Boxes are designed in a way that permits fast, easy installation.

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important chapter, devoted exclusively to UHF electronics, covers such special tubes as klystrons, magnetrons, and traveling-wave tubes.

Professor Brown's teaching experience goes back over a period of thirty-five years. During World War II, he also served as a physicist in the fields of electronics and magnetics at the Naval Ordnance Laboratory.

Electronics

By George F. Corcoran and Henry W. Price. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 459 pages, $7.00.

In this new text the authors affect a balance between electron-tubes and transistors on one hand, and the associated circuitry on the other.

With emphasis on the circuitry aspect of the subject, the authors have nevertheless included a comprehensive treatment of the basic physical principles of electronics. Their discussions cover mobile charges, the vacuum diode, triodes, and pentodes, linear operation—Class A, non-linear operation—Classes A and B, feedback circuits, gas-filled tubes and associated circuits, germanium diodes and transistors, and oscillators.

As an aid to understanding feedback circuits and oscillators, they have included the concept of return voltage ratio, with nyquist plots of return voltage ratio employed as the criterion for stability of active electrical networks. Situations where the gain-bandwidth product remains fixed are considered.

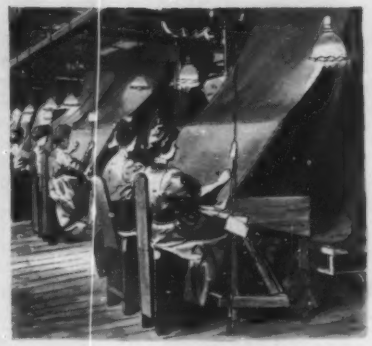
Professor and chairman of the department of electrical engineering at the University of Maryland, Mr. Corcoran is also the author of "Basic Electrical Engineering," published by Wiley in 1949, and co-author of three other books on electrical engineering. Assistant professor in the same department, Mr. Price is also a consultant to the Naval Ordnance Laboratory at Silver Spring, Maryland.

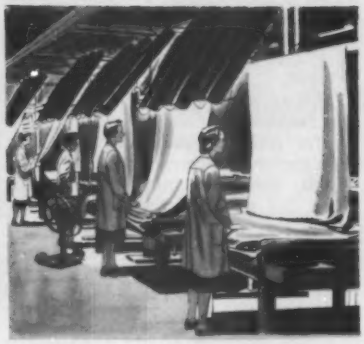
Applied Electronics

By Truman S. Gray. Published jointly by the Technology Press of the Massachusetts Institute of Technology and John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 882 pages, $9.00.

The second edition of this work retains the purpose and much of the plan of the first edition. The major aims in the revision have been: to improve and clarify details; to bring the coverage up to date; and to include new develop-

HAS YOUR LIGHTING KEPT PACE WITH PROGRESS?





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Sylvania lamps bring you maximum light with *minimum* heat. Place your hand on a lighted Sylvania Fluorescent Lamp and you will be amazed at the mild, low temperature of the brilliant tube.

In many stores, offices and factories where maintained temperatures are desirable, the coolness of Sylvania lamps becomes a factor of extreme importance.

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ments such as the transistor and its applications.

The first part of the book is devoted to a discussion of the physical phenomena which form the foundation of electronics. This material is followed by an explanation of the way the phenomena combine to govern the characteristics, ratings, and limitations of electronic devices.

The author's emphasis on clarity and reasoning makes the book useful for independent study. He has been careful to provide all the links which the experienced engineer takes for granted but which may easily be overlooked by the student. In general, he places less emphasis on advanced mathematics than on a scrupulous attention to such thought-aids as the precise definition of symbols and their interpretation in terms of physical qualities.

For engineers and students with little knowledge of the subject, *Applied Electronics* presents an understandable discussion starting from elementary facts and principles. For those who have already gained a basic knowledge, its foundational treatment and practical illustrations will provide a useful means for further study and reference.

Free bulletins

available to our readers

A helpful **manual for laying out switchgear.** Bulletin 200, has been published by **Continental Electric Equipment Co.,** Box 1055, Cincinnati 1, Ohio. The simplified format and presentation of text and illustrative matter make this 36-page, two color catalog easy to use and understand. It is a manual that will prove helpful for everyone interested in specification and application of low voltage switchgear. Copies of Bulletin 200 are available on request.

A new, six-page technical data bulletin covering Fixtohm deposited carbon, one per cent resistance tolerance, **precision resistors** has been announced by **Campbell Industries, Inc.,** 3806 St. Elmo Ave., Chattanooga 9, Tenn. Three new sizes, with power ratings from ⅛ to two watts, resistance from 10 ohms to 100 megohms are described. The brochure gives performance test results, electrical and mechanical characteristics, material and construction details, protective finishes and enclosures available. Bulletins and samples may be obtained by writing to the company.

Harrison Transformer Corp., Brown Ave., Springfield, N. J., has announced publication of their catalog H-10-101, which is available without charge upon request.

The catalog is composed of 16 pages, the first four of which give specific information and suggestions for the **proper application of Harrison Dry-Type Transformers.** The body of this catalog has descriptive information, illustrations, and diagrams of the dimensions, and also schematic diagrams of Auto and Double Wound units and specification charts and list prices of the transformers.

A new free booklet that contains practical suggestions for schools and colleges on **reducing maintenance and power costs and protecting equipment** and users has been published by **Arrow-Hart & Hegeman Electric Co.,** 103 Hawthorn St., Hartford 6, Conn. Entitled "Ideas on Electrical Convenience for School, College and University," the free booklet describes and illustrates wiring devices that have been selected to meet the needs of educational institutions.

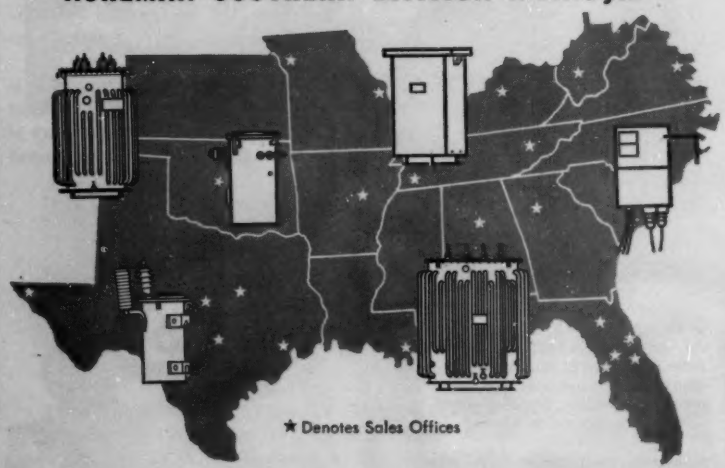
A new 30-page, two color catalog of **Cords Limited Division, Essex Wire Corp.,** 121 Dodge Ave., DeKalb, Ill., combines its comprehensive **wire cordage types and cord set components** within the covers of one book. The catalog contains 64 photographs of facilities and some typical production cord sets. A special Engineering Section contains 118 separate dimensional engineering drawings of Cords Ltd. plastic and molded rubber cord connectors, strain reliefs, crotches, and sockets. There are also simplified tables showing maximum ampere and voltage ratings for various portable cordage and wire gauges, with typical appliance and industrial cordage and cord sets listed.

To obtain a copy, write the company direct.

Rural application of voltage regulators is discussed in a new 20-page booklet (B-6054) available from the **Westinghouse Electric Corp.,** Box 2099, Pittsburgh 30, Pa.

To help clarify the voltage regulator application story for REA's municipals and smaller private utilities

KUHLMAN SOUTHERN DIVISION to serve you



Rapidly expanding industry throughout the South can look to the modern plant of Kuhlman Electric Company at Crystal Springs, Mississippi, for safe, sturdy, efficient transformers to help provide a steady and dependable source of power. For complete information, write today.

147

KUHLMAN ELECTRIC COMPANY

BAY CITY, MICHIGAN • CRYSTAL SPRINGS, MISSISSIPPI

not having highly technical engineering staffs, this booklet has been restricted to a non-technical vein. Divided into two equal parts, the booklet first deals with the theory of application of voltage regulators on rural lines.

In this connection, application of voltage regulators to lines with distributed loads, concentrated loads, and a combination of distributed and concentrated loads is covered.

The Pittsburgh Reflector Co., 405 Oliver Bldg., Pittsburgh 22, Pa., has recently issued a comprehensive catalog (Bulletin B) on **Asymmetric Silver-mirrored Permaflectors** for show window, perimeter, general and indirect lighting applications of all types.

Bulletin B outlines the values of various types of reflecting surfaces so that the user may know the proper reflecting surface to select for obtaining maximum footcandle efficiency. It goes into the advantages of particular types of asymmetric reflectors for varying work functions, distribution patterns and wattages.

In publication No. 502, **"Automatic Transfer Switches,"** recently issued by the **Automatic Switch Co.**, Orange, N. J., the factors to look for in selecting an automatic transfer switch are described in detail. The pamphlet takes up continuous duty rating, single throw vs double throw, quiet operation, full relay protection, double source control, signal contacts and lockout relays, transfer switches to meet minimum space requirements, the need for a built-in time delay, operating speed and other factors.

Engineering details of **Allis-Chalmers** transformer type 5/5 per cent **step feeder voltage regulators** (Type AFR) are described in a new 16-page bulletin released by the company.

Copies of "Allis-Chalmers Power Regulators," 01B6056D, are available on request from Allis-Chalmers Manufacturing Co., 938 S. 70th St., Milwaukee, Wis.

Two new bulletins on **electrical drives for the textile industry** have been announced as available from the **General Electric Co.**, Schenectady 5, N. Y.

A two-color eight-page publication, designated GEA-5993, presents information on new adjustable-frequency drive systems for synthetic fiber machinery. It explains how electrically co-ordinated drives offer many opportunities for increasing flexibility, reliability, operating speeds, and accuracy, and reducing maintenance and costs.

The second bulletin, a two-color, four-page publication numbered GEA-5258A, concerns adjustable-speed warper drives. It tells how modern electric drives are designed to enable textile operators to warp at higher speeds, reduce yarn breaks and lost ends, and improve beam quality.

A new booklet, covering a complete line of **outlets, switches and utility boxes and covers** has just been announced by **General Electric's Construction Materials Division**, Bridgeport 2, Conn.

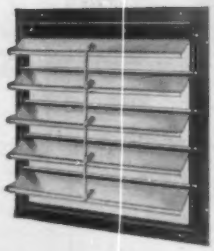
This booklet includes a list of more than 170 different types of boxes to meet virtually every wiring installation need. Included are boxes for use with armored cable, non-metallic sheathed cable, rigid and flexible conduits, and electrical metallic tubing.

Bar hanger boxes, covers, gang boxes and a number of other miscellaneous items are also listed, together with a Selection Guide that gives the answer on what type of box to use for a particular job.

Publication Number of the booklet is 18-74.

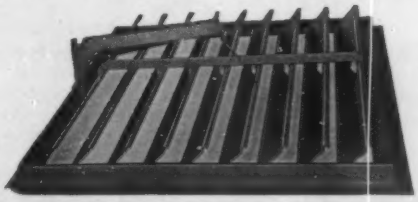
Elgo Ventilating Specialties

A Shutter With Many Advantages



First, its louvers are weather-stripped in such a way that they fit more snugly. Second, its louver blades have felt silencing pads—no rattling. And, third, it is exceptionally sensitive to air currents. Sizes from 12" to 72" square —also rectangular.

Write for catalog and prices



"Echo" Automatic Ceiling Shutters

Used for attic ventilation. Installed in attic floor at the base of a penthouse, the louvers being operated by the suction of the fan.

Free Catalog

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TRADE MARK
HOT-DIP GALVANIZED
GROUND RODS

5/8" X 8'

The finishing touch to a first-class job

THE MARK of a good electrical job well done is a DIXISTEEL Galvanized Ground Rod.

Sharp-pointed for easy driving . . . hot-dip galvanized for positive protection against rust. 5/8" x 8' and other popular sizes carried in stock.

Write or telephone for prices.

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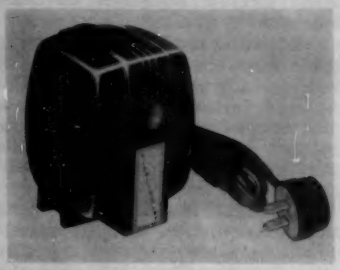
New products

Switch automatically turns on house lights

ANNOUNCEMENT has been made by the Fisher-Pierce Co., Inc., 63 Pearl St., S. Braintree, Boston 85, Mass., of a new light control device for homes that works automatically when darkness comes. Called the Nitelighter, it turns on hall, enclosed porch or living room lights the moment darkness



comes, protecting the home while the owner is away and affording a lighted home upon return.

The Nitelighter is placed on a table or mounted on the wall with its photoelectronic light-sensitive "eye" pointing toward a window. The lamp to be controlled is plugged into the Nitelighter plug fixture. When it gets dark outside, the Nitelighter will automatically turn the light on and it will stay on until daylight returns. It turns lights on at different times each night, depending on what time darkness comes. This variation, recommended by insurance companies, fools prowlers who watch for signs of an empty house.

The Nitelighter is also ideal for controlling lights such as: enclosed porches, outdoor lighting, playrooms, store windows, electric signs, offices, hospital corridors, roadside telephones, poultry houses, stairways, hallways, garages, factory yards—wherever automatic lighting provides convenience or safety.

The unit is compact, and is put into operation simply by plugging the cord into any 110 volt 60 cycle a-c outlet. An eight foot cord set with adaptor plug and a bracket for flat surface mounting are included. Fully guaranteed, it will control lamps up to 300 watts and is designed for interior use.

For additional data, ask for item 701, using the coupon below.

Split bolt connector has strength of steel

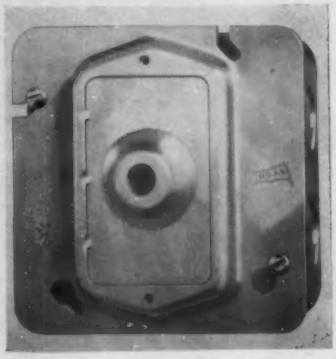
ANNOUNCEMENT has been made of the introduction of the Dosson "F", a new split bolt connector, by the Dossert Manufacturing Corp., 249 Huron St., Brooklyn 22, N. Y.

This new connector is a completely coldformed service connector, possessing the equivalent strength of mild steels.

For additional data, ask for item 702, using the coupon below.

New device permits easy knockout removal

A NEW DEVICE designed to eliminate time wasted in finding and cleaning outlet boxes has been introduced by All-Steel Equipment, Inc., Aurora, Ill. Called the Raco "Locator" Device Box, this unit also does away with bits of plaster lodging in the



pipe and avoids expensive cleaning operations before wiring.

The Raco "Locator" positions over the outlet box before plastering. After plastering, the raised section of the device remains in sight. Even in instances where warped or imperfect studding requires extra thicknesses of plaster, a raised embossment in the center of the knockout is always visible. A leverage hole in the embossment permits easy removal.

Handy Return Coupon

Request More Information On New Products

TEAR OUT AND MAIL TODAY!

Please be sure to fill in your firm's name and your position on the coupon. This service cannot be extended to you unless this information is furnished.

ELECTRICAL SOUTH JULY, 1954
806 Peachtree St., N. E.
Atlanta 5, Ga.

Please send, without obligation, additional information on new products described (give key numbers) .....

.....

.....

Name ..... Position .....

Company Name .....

Address .....

City ..... State .....

The Raco "Locator" is available in two sizes: ½-inch raised and ¾-inch raised.

For additional data, ask for item 703, using the coupon on page 66.

Ground clamps feature high pressure contact

A NEW LINE of economy ground clamps has been developed by Anderson Brass Works, Inc., Birmingham, Ala. These new, low-cost standard duty ground clamps are available in three sizes—½ inch, ⅝ inch, and ¾ inch. They are designed to

give high pressure contact in a wide variety of standard applications, and are cataloged as Anderson's GC type ground clamp for parallel cable connection to rod or pipe.

Bodies of these clamps are made of high strength cast bronze alloy, and the square head bolts are silicon bronze. They are designed to withstand Mercurous Nitrate Specifications ASTM B-154-51 and the more severe ABW 124-2, thereby giving added insurance against stress, corrosion and seasonal cracking.

For additional data, ask for item 704, using the coupon on page 66.

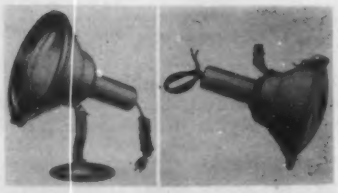
General purpose floodlight offers versatile mounting

A NEW CROUSE-HINDS general purpose floodlight, type MDB-10, is available now either with flat base or suspension assemblies, and may be installed as easily in grounds, lawns or turf as on elevated metal arm brackets.

The flat steel base, used for ground locations, has a diameter of six inches and two mounting holes spaced to fit a four-inch outlet box and a one-and-a-half-inch knockout. For temporary mounting, a steel ground stake is available.

Unlike the steel flat base, which is equipped with four feet of two-conductor cable with plug, the aluminum suspension base has a half-inch conduit thread and is equipped with two feet of cable with terminals. These terminals are to be attached to the terminal block of a Crouse-Hinds type GPT cross arm for installation on poles.

Formed from lightweight sheet



aluminum (net weight with flat base, 4¼ pounds; with suspension base, 3½ pounds), the new floodlight is 11 and ⅞-inches long and 11 and ⅛-inches across the lens face. According to Crouse-Hinds, with a 100-degree etched Alzak finish reflector, the new floodlight delivers a 58.5 per cent beam efficiency. When equipped with 35-degree polished Alzak finish reflectors, beam efficiency ranges between 42.9 and 48.4 per cent. Either 300- or 200-watt bulbs are used for general lighting service, but colored lenses take only 200-watt lamps.

Tools are unnecessary to relamp the MDB-10 lighting fixture since a lamp is removed and replaced by unlatching a single clamp and opening the hinged door. This door, die-formed from aluminum channel frame, is weather-proofed by means of a heavy extruded rubber gasket that seals the heat resistant glass lens to the housing.

For additional information, request Technical Bulletin 386-F, which describes the MDB-10 floodlight's construction, and illumination characteristics. Write Crouse-Hinds Co., Wolf and 7th North Sts., Syracuse, N. Y.

For additional data, ask for item 705, using the coupon on page 66.

Glass-sided luminaire has clean, simple lines

THE PURITAN, a trim modern glass-sided luminaire with clean simple lines, is one of the latest developments of the Smithcraft Lighting Div., Chelsea, Mass. The Puritan

harmonizes perfectly with any interior and was especially designed for use in any commercial or institutional application such as: schools, stores, offices, banks and similar installations. Its glass side panels are

Revere ELECTRIC MFG. CO. CHICAGO, ILL. The Leader in REAR SERVICE FLOODLIGHTS

PEEPSIGHT FOCUSING PERMITS ACCURATE DAYLIGHT AIMING

Eliminates NIGHT CLIMBING OF POLES

The "2000" Line

More Features... Less Maintenance

1—EASY SERVICING—locks in open position, permits use of both hands
2—ALL PARTS CORROSION RESISTANT for long life
3—TEMPERED GLASS spun into reflector
4—NO LOOSE PARTS to dangle in wind
5—CORD FURNISHED
6—WATERTIGHT packing gland
7—GASKETED AGAINST MOISTURE
8—SPRING LATCHES for positive seal
9—REAR PEEPSIGHT—most accurate method of aiming

Find out all about this remarkable Floodlight. Write for Catalog details.

Open view—fully accessible • 750-1000-1500 Watt Lamps

REVERE ELECTRIC MFG. CO. 6805 BROADWAY CHICAGO 40, ILL.
INDOOR & OUTDOOR LIGHTING FOR EVERY NEED

The Revere Line is complete

4200 SERIES
750 to 1500 WATT
ENCLOSED FLOOD

3800 SERIES
300 to 1500 WATT
ELIPTOR FLOODS

"ENDOVAL" MERCURY
VAPOR LUMINAIRE

3350 SERIES
300 to 1000 WATT
ENCLOSED FLOODS

AREA LIGHTER
WITH TOP FLOODS

decorative and efficient, allowing a soft, glare-free light outwards, while there is a high transmittance of down-lighting through the steel louvers.

Smithcraft's adaptable socket holder bridge is one of the Puritan's outstanding features, making it possible to change the number of lamps or lamp spacing in the field for intensity, to meet changing requirements—without removing the fixture.

Its design is as practical as it is attractive. The ribbed frosted prismatic glass panels are easily removed for cleaning, while the louvers are hinged from either side and can be removed without involving tools or loose parts. The ballast and wiring are easily accessible for servicing.

For additional data, ask for item 706, using the coupon on page 66.

New electric heater for small room use

A NEW LOW-PRICED electric heater which will supplement regular heating systems in winter and chase the chill out of any room in milder weather was announced recently by Westinghouse.

The heater will find its greatest use in bathrooms but also should prove popular in bedrooms, recreation rooms and dens.

Simple to wire into regular household electrical circuits, the built-in unit has a fully-supported heating element which insures long life. It

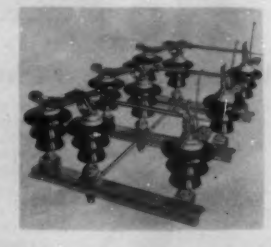
is guaranteed five years against burnout.

The heater has a stainless steel grill and an aluminum reflector which will not discolor. Its double action circulates warm air and radiates infrared rays at the flip of the conveniently located built-in switch. The heater is available in either a 1,250-watt or 1,500-watt type.

For additional data, ask for item 707, using the coupon on page 66.

Disconnect switches feature mounting variety

A COMPLETE new line of outdoor, group-operated disconnect switches rated 7.5 through 69 kv, 400 and 600 amperes, is being manufactured by the Line Material Company. These switches are designed for either pole or structure mounting in a horizontal, vertical, or inverted position. Also available are manual-



ly operated, interphase mechanism assemblies that may be direct or indirect connected, with or without outboard bearings.

The switches feature silver-insert-to-silver-insert high-pressure contacts, which are field adjustable; all bearings and moving joints that are lubricated with silicone grease for life and sealed by silicone cord rings; rotating switch blades with a very powerful lever advantage that assures positive operation under ice or corrosive conditions; a fewer number of current interchange points for cool operation; and adjustable terminal clamps that accommodate a wide range of conductor sizes.

Because of its extreme mechanical flexibility, the interphase mechanism assembly permits angular distortion of mounting structures which heretofore would have prevented this class of equipment from operating. The interphase mechanism can be field assembled prior to attachment to a switch.

For additional data, ask for item 708, using the coupon on page 66.

Switches designed to meet strenuous load conditions

A NEW LINE of 20 amp.—125 volt T-rated switches has been announced by the Leviton Manufacturing Co., 236 Greenpoint Ave., Brooklyn 22, N. Y. These switches are completely enclosed in a heavily-sectioned phenolic housing. Their rugged construction and strength has been designed to meet strenuous load conditions for commercial, residential and industrial applications.

These switches are available in single pole, double pole, and three-way models with ivory or brown toggles.

For additional data, ask for item 709, using the coupon on page 66.

Hook-on volt-ammeter has contoured trigger

A NEW HOOK-ON volt-ammeter has been announced by the General Electric Company's Meter and Instrument Dept., Schenectady 5, N. Y.

Designated the AK-5, the pocket-size unit is designed to measure current and voltage quickly and accurately. Its automatic scale chang-

ing feature eliminates the possibility of reading the wrong scale for the application.

It has a current range of 5/20/80/-350 amperes. The five-ampere range permits load checks on fractional-horsepower as well as low-energy control circuits.

The instrument also measures a-c voltage in three ranges (150/300/-750) without auxiliary equipment, provides accuracy up to three per cent of full scale, and withstands a voltage breakdown test of 4000 volts a-c.

The AK-5 will clamp around any conductor up to two inches in diameter. Its contoured trigger closes and opens the hook-on assembly, which is covered with insulation to help safeguard against grounding or short-circuiting.

For additional data, ask for item 710, using the coupon on page 66.

Radiant heating panel has thermostat attached

A HANDSOME new space saving, electrically operated radiant Glass-heat panel, with thermostat attached, has been announced by Continental Radiant Glass Heating Corp., One East 35th St., New York 16, N. Y.

The new unit provides immediate heat as soon as the switch is turned on. The panel is constructed of specially tempered glass fused with aluminum strips.

Its healthful infrared rays are projected by means of a metal reflector behind the panel. The panel may be surface mounted or recessed. It is 16 by 24 inches in size, has a 1,000 watt capacity, and uses a-c current only.

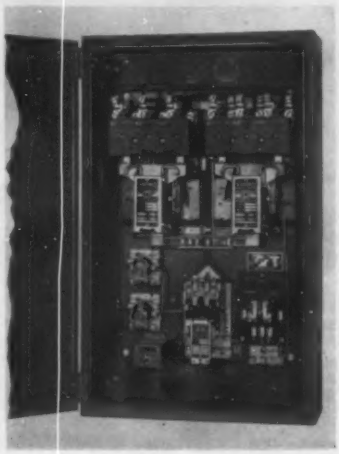
For additional data, ask for item 711, using the coupon on page 66.

Automatic transfer panels of vital importance

AUTOMATIC TRANSFER PANELS have long been a "must" for installations where continuity of electrical service is of vital importance. Hospital operating rooms, for example.

Recently, there has been a definite swing to a wider usuage of automatic transfer panels. This increased usage has resulted from the growing appreciation of their value in preventing panic which frequently follows complete failure of lighting service in any public gathering building. When a standby source of power is available, failure of the normal source will cause only a blinking of the lights during the short interval required to transfer the load. Because of this safety factor, more and more governmental units are requiring automatic transfer panel installations in public buildings.

Automatic transfer panels are electrically operated devices to connect an electrical load to a normal source of electrical power and to transfer the load to an emergency source in case of failure of the former. When the original source of power is restored, the load is retransferred to the normal source of supply. The action described takes place automatically, without the attention of an operator.



Contactors used in transfer panels are available in six different ratings, from 15 amperes to 300 amperes. Special features available are phase failure relay, voltage sensitive relays, time delay relays to delay return to the normal source, and a test switch to stimulate failure of the normal source of supply.

Detailed information on automatic transfer panels can be obtained by writing Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. Ask for Bulletin 8901.

For additional data, ask for item 712, using the coupon on page 66.

Double duty receptacle combines separate circuits

SEVERAL ROOM LIGHTS may be conveniently turned on or off at a single wall switch when they are connected to one of the outlets of a new duplex wall receptacle recently introduced to the trade by John I. Paulding, Inc., New Bedford, Mass., a leading producer of wiring devices for over 40

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years. The other outlet, constantly alive, provides current for appliances. This dual purpose unit employs two separate feeds and one return.

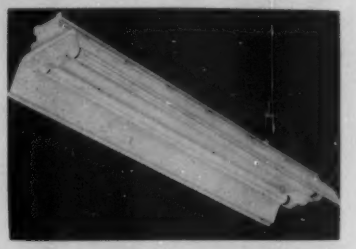
Construction is high impact, high dielectric molded Bakelite, available in either brown or ivory. Unit fits standard boxes and wall plates. Outlets are T-slot in design to accept either plug style. Other features include solid brass terminals with screw heads large enough to hold two No. 10 wires securely; heavy, positive grip, spring-bronze, double wiping contacts; side wiring and plaster ears. Receptacle rated for 15 amps at 120 volts, 10 amps at 250 volts. It is listed by Underwriters' Laboratories.

For additional data, ask for item 713, using the coupon on page 66.

Slotted reflectors create chimney effect

ANNOUNCEMENT has been made by Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y., of its improved line of all-white slotted reflector fluorescent fixtures.

The slotted reflectors are recommended for areas where critical viewing tasks are performed, such as in machine shops, production assembly lines, and inspection departments. The slots provide a strong upward component of light — about eight per cent — and thus reduce brightness contrasts particularly when ceilings and such other overhead structures as pipes, beams, etc.,



also are painted white. This upward component of light ordinarily is "trapped" in closed-top reflectors.

Another feature of the slotted reflectors is of primary interest to bakeries, canneries, and other food processing plants. The slots create a "chimney effect" which carries off the air normally retained inside the reflector thus avoiding accumulation of dust and dirt.

For additional data, ask for item 714, using the coupon on page 66.

Enclosed floodlight meets all position requirements

PYLE-NATIONAL CO., Chicago, announces the addition of a new 20-inch floodlight, designated Type 20175, to the company's line of enclosed, weather-tight, dirt-tight floodlights.

The floodlight, which will insure the economy of maximum lamp life, is designed to burn 1000-watt G-40,

1500-watt G-48, and the 1500-watt PS-52 lamps which have special burning positions recommended by the lamp manufacturers. The floodlight will also take the 750 and 1000-watt PS-52 lamps and 700 and 1000-watt Mercury vapor lamps.

It is fully enclosed and constructed throughout of rugged, corrosion proof materials. Door and glass joints have a tight, soft packing seal which keeps moisture and dirt from reflector, lamp and inside of lens thereby preserving the initial high beam efficiency indefinitely, with a minimum of maintenance expense.

The full 360 degree vertical and horizontal body adjustments are provided with a very sturdy locking device to avoid any chance of accidental movement. A register, which is part of the locking device, makes it very easy to accurately return the projector to its original adjustment, if it is necessary to tilt it or turn it for relamping or cleaning. In addition, angle degree markings are provided to aid in making the original setting meet the specifications of the lighting layout.

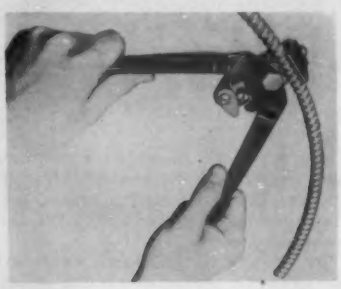
The Pyle Type 20175 floodlight is supplied with a wide choice of door lenses and mounting bases.

For additional data, ask for item 715, using the coupon on page 66.

Armored cable cutter snips with one stroke

A NEW CUTTER for BX armored cable has been announced by Telkor, Inc., Elyria, Ohio.

Called the Telkor Armor Cutter, it snips both sides of the BX metal



armor in one stroke, without touching the wire conductors inside. The Telkor Cutter replaces hacksaw cutting, is easy to use in tight locations and adjusts to all common BX cable sizes.

The handles and jaw of the cutter are drop forged and precision machined. The cutting blades are removable for sharpening or replacement. The tool is 10 inches long and weighs 1¼ pounds.

For additional data, ask for item 716, using the coupon on page 66.

A-C switch designed for quiet operation

A NEW and unusually quiet alternating current switch, called the Topper a-c switch, has been introduced by Harvey Hubbell, Inc., Bridgeport, Conn., manufacturers of wiring devices. Presently available in single pole and three way types, the new Topper Switch is designed

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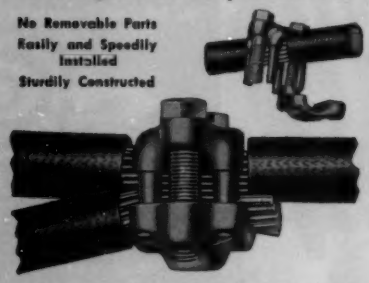

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to give dependable, long life performance at full rated loads.

The new 15 amp 120-277 volt a-c switch was developed to meet the need for a quiet yet thoroughly dependable a-c switch to withstand the inductive load characteristics of fluorescent lighting installations; withstand resistance, surge, or inductive loads found in heaters, incandescent lamps, fluorescent lamps and motors; and to insure lifetime service.

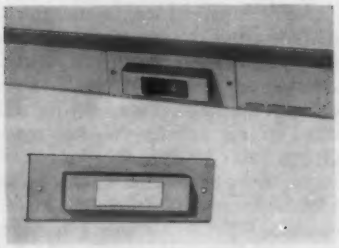
According to tests recently completed, the Hubbell switch meets and exceeds the rigid requirements set up by Underwriters' Laboratories for a-c switches. It may be used at full-rated capacity on fluorescent loads at voltages from 120-277, on inductive loads 120-277 volts and on incandescent lamp loads. In addition, it may be used for motor loads 120-277 volts at 80 per cent of current switch rating.

Quality features of the Hubbell switch include long-life silver contacts which prevent corrosion and hold temperature rise to a minimum; complete enclosure of operating parts; and back and side wiring convenience.

For additional data, ask for item 717, using the coupon on page 66.

Deep-bodied device cover allows quick mounting

NATIONAL ELECTRIC Products Corp., Gateway Center, Pittsburgh, Pa., has introduced a new deep-bodied device cover, cataloged as the 1710 CB, designed to accommodate all standard makes of single-pole circuit breakers in sizes from 10 to 50



amperes. This new fitting is particularly adaptable for Surfaceduct electrical surface raceway installations where individual circuit breaker control is desirable for air conditioning units or other applications requiring individual equipment control.

The new device cover enables the circuit breaker to be mounted quickly and easily within the Surfaceduct raceway. There is no need to offset the duct run to insert breakers, since the cover simply snaps on the raceway in the same manner as the standard capping.

With each cover, National Electric supplies mounting bridges and screws, to which the cover mounts permanently and locks to the duct. The cover is made of 19 gauge steel, has a gray enamel finish, and measures six by 2⅛ inches.

For additional data, ask for item 718, using the coupon on page 66.

Universal watthour meter permits field conversion

ANOTHER STEP toward a complete line of G-E Type I-50 single-phase watthour meters has been made with the development of an I-50 universal meter, according to an announcement by the General Electric Company's Meter and Instrument Department.

The new meter, incorporating all the advanced design features pioneered in the company's standard I-50 model, permits conversion to be made in the field from a two-wire, 120-volt circuit to a three-wire 240-volt circuit or vice versa. The only tool used is a screwdriver, and conversion time required is approximately one minute. No additional parts are required to make the conversion.

For additional data, ask for item 719, using the coupon on page 66.

Door openers

(*Continued from page 35*)

anism to slightly more than $100 to dealers or new-home developers.

Among the luxury details included in all types, approved by Underwriters' Laboratory, is a safety light that automatically turns on as the garage door opens.

Stadium lighting

(*Continued from page 19*)

the game is over, thus allowing the spectators to come in and leave with an adequate amount of light provided by these units.

The other accompanying photograph, from the viewpoint of a spectator in the stands, shows the field under actual playing conditions. The diffusion of the light striking the ground can be determined by the equally spaced shadows converging from each individual figure. We have also found that the lighting intensity is adequate, the ceiling is high, and the glare in the stands from the opposite side is practically nil. Our footcandle readings range from 30 to 32, taken in the center of the field, at the halfway mark from sidelines to center and from goalline to goalline.

Incidental lighting as used underneath the stands, is obtained

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The WIREMOLD Company
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from 150-watt projector floods spaced on 12-foot centers and aimed alternately under and out from the stands. All wiring is underground and the entire installation is operated by remote control from the master control center and press box, thus making it easy to control the entire lighting of the field during half-time activities.

In addition to this field, we also designed the floodlighting and wiring for an adjoining practice field and field house. The practice field contains 8 55-foot creosoted poles using 40 1500-watt open-type fixtures. The connected load of this entire athletic plant is 360 kilowatts. Grim Stadium's portion of this is 278 kilowatts.

We believe that our new technique of setting the poles on top of the transformer vaults not only saves a considerable amount of money over the method of digging vaults underground, but that the added six feet gained as a result of setting the poles atop the transformer vaults does improve the lighting characteristics of the field. Likewise, the idea of setting the transformers in the vaults certainly increases the beauty of the stadium and improves the maintenance accessibility of transformer equipment. Inasmuch as the lighting system installed is far above the average for high school stadiums, it is only logical that the Texarkana, Texas, school board, residents, participants and visitors to Grim Stadium voice their praises of the new and easier look of the games played here.

Market possibilities

Also, in employing these techniques, both we and the school authorities discovered the possibility of an unsuspected market for builders and electric contractors. For the new Grim Stadium proves that high schools can use bigger stadiums.

Previous to completion of Grim Stadium, attendance was mediocre. After construction of the new stadium, with a capacity of 7,000, it was almost completely filled for every football game. Of course, we believe that improved lighting created the desire of spectators to fill those seats.

The stadium, incidentally, is of prefabricated construction, having been shipped in by sections from Oklahoma.

Preventive maintenance

(*Continued from page 22*)

example, oiling is done electrically and hydraulically. If oil flow ceases for any reason, a horn is electrically set off as a warning signal. An overload on a drive motor immediately turns on a red light. In case of fire, ventilating fans, electrically controlled, are automatically shut off. Electrically controlled fire sirens give the location of the fire.

Emergencies

Serious emergencies have been few and have been caused mainly by external influences such as lightning or high wind. Before lightning protection had been completed, there were three outages. With proper grounding and sheathing, this trouble may have been eliminated. Every pole is grounded with not more than five ohms resistance at each point. A high degree of protection has been afforded by the use of lightning arresters which will by-pass a surge and allow it to go to ground, with voltage being quickly restored to the original value of 4,160 volts, there being many motors of that voltage in the plant. In the event of a power failure, the plant has an emergency diesel generator for stand-by power for starting up auxiliaries.

Throughout the entire mill, electrical or electronic activation and controls are used even to the opening and closing of some machine room doors. With the immense amount of electronically-operated equipment, controls are more complicated than in mechanical operation, but maintenance is less complicated. Modern instrumentation for testing simplifies many procedures.

Residential maintenance

(*Continued from page 23*)

"Months later I was called to the maintenance headquarters of a company that operates a transcontinental passenger bus system and the man I saw showed me the plans of an attractive—for me—wiring job. After going over the plans thoroughly he told me to start buying so I could get started at once. Up to this point nothing had been said about cost and I kept stalling around, waiting for the subject to come up in due course.

"Finally, this man said that I would probably want to see the boss and I thought, 'Oh, oh! This is it.' But when I walked into one of those big, swanky offices with thick carpet on the floor, the boss turned out to be my customer who I saw for the first time in baseball cap and paint-stained trousers. All he said to me about the job was, 'Ernest, if you do as good a job here as you did at my house, everything will be all right.' "

That bus company is now one of

Manufacturers Representatives or Salesmen Wanted to sell from catalog and price list specially made for electrical wholesalers, complete line, brass, steel, iron fittings, electrical specialties, parts, hardware used for Incand. or Fluor. Lighting Fixtures or Lamps. Must have following. Choice territories open. Commission. Give resume. Box No. 695, **ELECTRICAL SOUTH**, 806 Peachtree St., N. E., Atlanta, Ga.

SALES ENGINEER WANTED

Travel state of Florida. Salary, expenses, bonus and car furnished. Contacting electrical distributors, engineers, architects and contractors. Unlimited future. Send full information and details in application. Chelsea Fan & Blower Co., 188 Hunter Street, S.E., Atlanta, Ga.

MANUFACTURER'S AGENT

Twenty years representing leading National Manufacturers . . . qualified salesforce for coverage of Southeast and Southwest . . . desire only established National Line of Fittings, Conduit, Boxes, or allied line for all or any part of territory. Box 697, ELECTRICAL SOUTH, 806 Peachtree St., N. E., Atlanta, Ga.

LIGHTING FIXTURES

Sta-Brite Fluorescent Mfg. Co., P. O. Box 6352, Miami, Florida has added a complete line of contemporary lighting fixtures, Hi Hats, Bullets, recessed, etc. in addition to their extensive line of Fluorescent and Slimline Fixtures. Catalog on request.

FOR SALE

One used Tall 2" thinwall bender complete, good condition. $150.00. One used ¾ Van Dorn electric hammer for $50.00. Box 700, ELECTRICAL SOUTH, 806 Peachtree St., N. E., Atlanta, Ga.

Ernest Butcher's best maintenance customers and Butcher Electrical Service took over by buying all the firm's tools and materials for electrical maintenance.

Another industrial firm—Stokely Van Camp—also went out of the electrical maintenance business, selling tools and materials to Butcher. Their maintenance man asked to be relieved because of ill health and recommended Butcher for fill-in service. After the maintenance man's ultimate death, Butcher had accumulated cost and figures over a period of months and these were compared with relative costs while the maintenance specialist had been on the job.

"He was one of the best on industrial maintenance," comments Butcher, "but our costs were found to be 28 per cent less than his. That isn't just bragging, either. Any electrical contractor who is equipped can get together the same kind of cost story for industrial maintenance customers.

"We have everything in the way of men, equipment, tools and material. For one type of job we send one man whereas the next call might demand the talents of an entirely different type of man. The industrial concern must keep and pay a highly proficient electrician and use him for everything, even to changing light bulbs."

Files maintained

Whenever Butcher Electrical Service does a wiring job a master plan goes into the files and is kept up to date as changes are made. Butcher recently had a cutsomer who added a 25 hp motor. There was an obvious connection, but the master plan showed that line was loaded, so they went 50 feet to another line, where someone not acquainted with the job would have overloaded the first line. This type of service is one of the Butcher sales points in dealing with all maintenance customers.

A master plan is also a file treasure on every house-wiring job. And in the residential field, Butcher is convinced that 80 per cent of houses built since 1940 are inadequately wired for modern living conditions and multiple appliances. He adds:

"When we wire a house we tell the customer that it is brand new, that materials are not infallible and that something is almost certain to go wrong. In that case they are to call us, and there is nothing more urgent in all of a business day than such a call-back."

Adequate wiring stressed

The firm gives the usual adequate wiring guarantee, but tries to enhance the guarantee by impressing on the customer that any trouble with electrical circuits is trouble that belongs to Butcher. If a house goes along for a year without any electrical troubles, then it is a maintenance problem. Butcher would take the time, if permitted, and call off the names of Dallas families his company has been serving for three generations.

He remembers, too, another job he was invited to bid on as a result of a residential maintenance contact. It was rewiring on a boys' home and he shaved his price to a little above cost as his contribution, and put in his bid, confident of the outcome. He was shocked out of his complacence, however, when told with some asperity he was $4,000 higher than his only competitor, a Fort Worth contractor.

That was one job Butcher didn't get and it was some time later before he found out why.

A salesman approached him with surplus conduit quoted at a fraction of the market price. Assuring himself it was clean merchandise, Butcher bought heavily and the salesman was elated. His second big sale in North Texas, he crowed.

"Who else did you sell?" asked Butcher, and then it came out.

Just the wire needed for the boys' home job was what the Fort Worth contractor had bought, and for a song.

Lighting program

(*Continued from page 29*)

signed for local handling. The local committee will be encouraged to make use of whatever training, promotion and operational facilities may be readily available to them.

But let's stop talking generalities and see how it works.

Once the local committee of your industry has been set up, the necessary funds gathered, the local bureau is ready to embark upon its program.

Training of salesmen

First comes the sales training program, based on texts and guided by an instructor's manual, both of which have been especially prepared by a competent agency working in consultation with the National Lighting Bureau committees and staff.

The subject matter of the course will be emphasized with slide films, recorded excerpts of instances of "good" selling and "poor" selling, attention-holding props, descriptive booklets and audience participation.

There's another instruction segment to this program. It's the technical education course. All of us know that we have to keep in training for the tough selling job we are in.

It not only requires sales training, but today it requires technical training as well.

Technical education

It is the aim of this program to bring an appreciation of the science of lighting within the ability of the average salesman so that he can plan small installations that are up to accepted industry standards. Each session will be divided between sales training and technical

education, with a short intermission between.

The underlying thinking of the technical education course is declared in the opening paragraph of its first chapter. This is a down-to-earth course on how to design a lighting or relighting job. It is designed primarily for the electrical contractor who has a practical knowledge of his work, but has never had the technical training of a lighting engineer.

A pocket size Manual of Certified Lighting carries all the data the contractor will need to lay out a certifiable job. A simple procedure has been set up so that the trained contractor can get his plans certified by the local bureau.

Then the bureau issues a Certificate of Conformance to Certified Lighting Standards. After the job has been installed the local bureau gives the contractor a decalcomania which he affixes to the customer's window.

And close on the heels of this, he goes to other prospects in the neighborhood, points out the fine job he did, and urges them to compare their old lighting with the beautiful new installation and the results it gives!

Promotion plans

But we won't wait for that comparison to get the snowball rolling! The program also has a promotion side which will operate through the advertising and the editorial pages of national magazines, as well as through the columns of newspapers in the areas of the local lighting bureaus. Promotion activities — both national and local — will be designed to aid the selling efforts of the contractor.

Newspaper advertising mats and copy . . . will be prepared for use by local groups. Booklets . . . designed for each major type of consumer, as well as mailing pieces . . . and other promotion materials will be made available to the contractor and to the local committee.

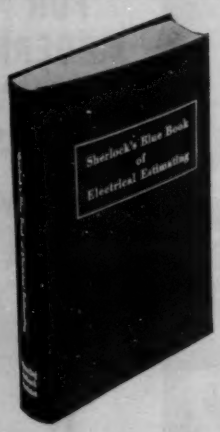
Once the program is in nationwide operation, advertising and publicity support in national business magazines will be furnished by the National Lighting Bureau.

Having encouraged and equipped the contractor to sell and lay out a lighting installation equal to industry standards, it strengthens his position with the customer. All in all, it's an up-grading, upselling program that can be expected to boost customer appreciation of good lighting. And for the electrical industry, that means sales. And with the resultant rewiring and re-inspection of properties, it means safety.

Contract implications

(*Continued from page* 32)

The subcontractor had given a bond securing performance of the subcontract and the surety was made a codefendant in the suit. But the surety company was not liable for the subcontractor's failure to perform the subcontract, because the contractor had made payments to the subcontractor before they were due, in violation of the terms of the bond. (It is well settled law recognized by practically all courts that a surety on such a bond is discharged from liability if the parties to the construction contract change the terms of the contract without the consent of the surety, particularly when the change increases the likelihood of the bonded party's failing to perform his part of the contract.)



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July ES-5

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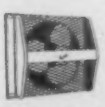

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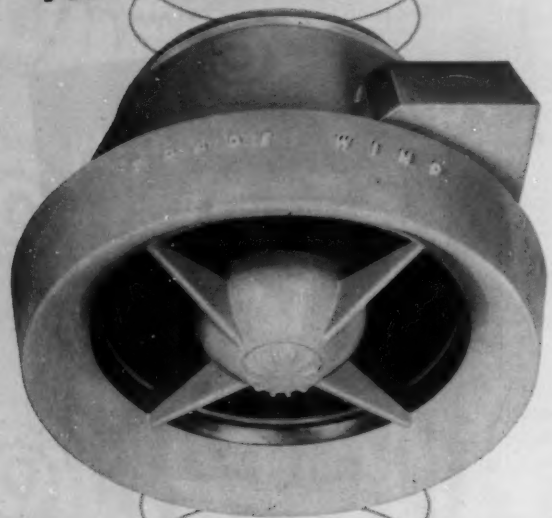

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